MARINE REVIEW

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MR. ROCKEFELLER HAS NOT SOLD.

NO TRUTH WHATEVER IN REPORTS REGARDING THE TRANSFER OF HIS RAILWAY AND VESSEL INTERESTS TO THE CARNEGIE COMPANY—OTHER COMBINATIONS.

Dispatches from Cleveland have been sent all over the country within the past few days, stating that the Carnegie Steel Co. had purchased the railway and vessel interests of John D. Rockefeller on the lakes, and that Mr. Rockefeller was to retire entirely from the lake business. It was said that this transfer of the important Rockefeller transportation interests on the lakes to the Carnegie company had been expected and was now a reality, thus establishing more securely the position of the Carnegie company as against the Federal Steel Co. The Carnegie company was to be in full control of its ore business from mines to furnaces.

The whole matter is positively denied, however, in a dispatch to the Marine Review from Mr. F. T. Gates of New York, who is in charge of all of Mr. Rockefeller's lake interests. Mr. Gates was asked for reliable information regarding dispatches from Cleveland, and his answer was: "There is no truth whatever in the report referred to."

Within the past few days the newspapers have also been filled with reports of a $400,000,000 steel combination, including the big Carnegie and Federal Steel interests; a combination of lake ship yards; the consolidation of Bessemer and open hearth steel plants in the central west, and the formation of one company to operate the soft coal mines of the Pittsburg district. Little attention is given to the story of one big combine in the steel industry. It would be against the policy of Andrew Carnegie and the strong position which the Carnegie company holds in the iron world. The Carnegie organization was perfected before some of the combinations now being made up were thought of. Something tangible may develop soon regarding the reports of a lake ship yard consolidation, but as yet there is nothing definite to be said on this score. The consolidated Bessemer and open hearth steel plants will be known, if the plans now well under way are completed, as the National Steel Co., and the capital will be $50,000,000 each of preferred and common stock. All that can be said of the proposed consolidation of soft coal interests in the Pittsburg district is that several meetings have been held and that there is some probability of a combination being effected. These interests have made several efforts in this same direction in the past, but there seems to be more earnestness among them this year, on account of the methods of combination in other lines that might readily be followed by the coal producers.

OFFICERS OF THE AMERICAN STEEL & WIRE CO.

At a recent meeting of the stockholders of the American Steel & Wire Co. of New Jersey, the new consolidation of steel and wire interests, the following were elected directors: John W. Gates, Chicago, Ill.; Isaac L. Ellwood, DeKalb, Ill.; John Lambert, Chicago, Ill.; William Edenborn, Chicago, Ill.; Henry Seligman, New York; Stewart H. Chisholm, New York; Philip W. Moen, Worcester, Mass.; William P. Palmer, Chicago, Ill.; Frederick Strauss, New York; Frederick P. Voorhees, New York; George T. Oliver, Pittsburg, Pa.; Charles T. Boynton, Chicago, Ill.; Francis M. Drake, Chicago, Ill.; James Hopkins, St. Louis, Mo.; Charles C. Howard, Jersey City, N. J.

The directors selected as members of the executive committee, Isaac L. Ellwood, John W. Gates and William Edenborn, and as general counsel, Seward, Guthrie & Steele of 40 Wall street, New York. The full list of officers follows: John W. Gates, Chicago, chairman; John Lambert, Chicago, president; William Edenborn, Chicago, first vice president; Isaac L. Ellwood, De Kalb, Ill., second vice president; Stewart H. Chisholm, New York, third vice president; Philip W. Moen, Worcester, Mass., fourth vice president; William A. Green, Chicago, treasurer; Thomas P. Alder, New York, assistant treasurer; Fred L. Watson, Chicago, assistant treasurer; Charles S. Roberts, Chicago, secretary; Floyd E. Patterson, New York, assistant secretary; O. Owen, Chicago, assistant secretary; Charles A. Honecker, Chicago, auditor; Charles A. Vogt, Chicago, assistant auditor; William P. Palmer, Chicago, general manager; Albert M. Crane, Chicago, assistant general manager; Charles T. Boynton, Chicago, general sales agent; Thomas H. Taylor, New York, assistant general sales agent; E. E. Stone, Chicago, general purchasing agent; Frank Baackes, Chicago, general superintendent; James S. Keefe, Chicago, general traffic manager; F. T. Bentley, Chicago, general freight agent; F. H. Daniels, Worcester, Mass., chief engineer; E. C. Lott, Chicago, manager Chicago district; Wallace H. Rowe, Pittsburg, manager Pittsburg district; Stephen W. Tener, Pittsburg, assistant manager Pittsburg district; A. T. De Forest, Cleveland, manager Cleveland district.

SHIP YARDS OF THE GREAT LAKES.

A further advance in the price of ship material, coupled with the fact that any orders now taken by the mills could only be for delivery well into the future, has caused a halt in plans for new vessels on the great lakes, even for delivery in 1900. The ship builders are disposed to go slow themselves in the matter of contracts for next year. Negotiations for the proposed three new Rockefeller ships for 1900 and for the two car ferries spoken of in these columns some time ago (for the F. & P. M. and Ann Arbor companies) are still under way, but the high cost of material and certain other circumstances connected with ship building affairs on the lakes just now are delaying a settlement regarding these orders.

Another steel steamer, the Arthur Orr, now badly wrecked and in dock at the West Superior ship yard of the American Steel Barge Co., is to be lengthened. About 48 feet will be added to the Orr. It is understood that as a result of the visit to this country recently of Herbert Waite, representing English underwriters, a basis of settlement has been reached with the owners of the Orr, and she is to be repaired and lengthened in time for the opening of navigation next season. The dock bill in the case of this vessel will be very large, as she has been held in dock (she was so badly damaged that she could not be floated) since the close of navigation, pending the settlement with underwriters. The contract for the work of excavation for the new dry dock at the West Superior yard has been let to the Barnett & Record Co. of Minneapolis. There were eight bidders. The contract involves the excavation of 60,000 cubic yards of earth, the driving of piles and a portion of the timber work. The balance of the timber work and the placing of the machinery will be done by the barge company. The dirt from the excavation will be used for filling in the low ground surrounding the dock on the south and west. The approach to the dock will be dredged as soon as the ice will permit. According to contract Barnett & Record must have their work completed by June 1, and it is expected that the dock will be ready for use by July 1. Upon its completion the company will be able to conduct repairs upon three boats simultaneously—two in the new and one in the old dock.

Senator McMillan of Michigan, has evidently had a hand in the formation of one of the companies for which the Detroit Dry Dock Co. is to build two large freight steamers. Names connected with the American Steamship Co., recently incorporated in Michigan for the management of this steamer, are James, Hugh, William C. and Gilbert N. McMillan and F. E. Driggs of Detroit, William E. McMillan of St. Louis, Mo., and Senator Nelson W. Aldrich of Rhode Island.

SHIPS ARE WANTED EVERYWHERE.

When the failure of the Atlantic Transportation Co. of New York, was announced, a short time ago, it was thought the lake vessel owners who had sent quite a fleet of wooden freight carriers to the coast—some forty vessels in all, but most of them of a kind that were no longer of a great deal of value on the lakes—had made a bad mistake, at least as regards the better class of these vessels. It now turns out, however, that all of the vessels that reached New York and Boston are wanted, not only by the receivers of the Atlantic company, but also by other shipping concerns, engaged in the coal trade on the seaboard. Receivers of the Atlantic company are trying to hold the vessels that have reached the seaboard, and will also endeavor to meet their obligations, as far as possible, regarding such of the ships held up at Nova Scotia as may be made available soon for the Newport News coal trade. The coal shippers and the Chesapeake & Ohio Ry. are evidently supporting the transportation company in this regard, for the reason that freights for vessels now in the service are more than double the figure at which the lake vessels might have been successfully operated, if great difficulties had not been encountered in taking them to the coast.

Only a short time ago it was thought the receivers of the Atlantic company would be unable to procure insurance of any kind for the lake vessels, but negotiations for retaining the ships are now being conducted on the expectation of securing one-half to three-quarters full policy with total loss. Mr. Henry A. Hawgood of Cleveland, owner of a schooner bearing his name, which was among the vessels that reached New York, took her away from the Atlantic company and sold her to the Scully Towing & Transportation Co. Other lake owners have also been figuring for the sale of their vessels on the seaboard, on account of default of contract by the Atlantic company. All things considered, the outlook for the old vessels that left the lakes is far more promising than it was a short time ago. Even as regards the vessels still in the St. Lawrence—those that were held above all but one of the rapids—it is thought that the demand for coal barges on the coast next spring will be such as to provide for all of them, as well as others that may be available on the lakes.

At the annual meeting in Washington of the Grand Harbor American Association of Masters and Pilots of Steam Vessels, which adjourned on the 6th inst. the following officers were elected to serve for the year 1899: W. S. Durkee, grand captain, harbor No. 4, E. Boston, Mass.; A. S. Fitts, grand first pilot, harbor No. 43, Toledo, O.; John C. Silva, grand second pilot, harbor No. 13, Providence, R. I.; Benj. F. Perkins, grand captain's clerk, harbor No. 6, Jersey City, N. J.; Luther B. Dow, grand purser, harbor No. 5, Brooklyn, N. Y.; Chas. A. Benham, grand trustee, harbor No. 42, Cleveland, Ohio.

A few car manufacturing plants like that which the Carnegie company is building at Homestead would soon remove fears regarding the car famine that is expected during the coming summer. Orders have already been booked for over 6,000 cars, to be built at the Carnegie works. Original plans for these works contemplated a plant of forty cars per day capacity, but this has been changed to 100 cars per day.

AMERICAN LINE SHIPS.

STORY OF THEIR OPERATION IN CONNECTION WITH MAIL SUBSIDIES, AS TOLD BY MR. CLEMENT A. GRISCOM, PRESIDENT OF THE INTERNATIONAL NAVIGATION COMPANY.—SEVEN AND A HALF MILLIONS FOR NEW LINERS TO BE BUILT BY THIS ONE COMPANY IF THE HANNA-PAYNE BILL IS PASSED.

Before the senate committee on commerce, a few days ago, Mr. Clement A. Griscom of Philadelphia, president of the International Navigation Co., said that if the Hanna-Payne bill is passed his company will have to build for American Line service four 12,000-ton ships within five years and contract to build another during the same period—altogether 60,000 tons, representing an investment of not less than $7,500,000. But it was to Mr. Griscom's statement of the results of running four big liners—Paris, New York, St. Louis and St. Paul—under the American flag that most interest was attached in considering the proposed shipping measure. There has been an impression that the American Line was receiving enormous sums of money for carrying the mail. Mr. Griscom summarized briefly the dealings of his company with the government since the purchase of the old Inman line, and presented some figures regarding a loss of $104,000 a year through the operation of four ships under the American flag. The story is a very interesting one. Mr. Griscom said in substance:

"We began under the Belgian flag, after having given a very careful study to the conditions which surrounded the operation of steamships under the American flag, and finding that we could not, under the American flag, compete with those who sailed ships under the British, the Belgian or German flag. So, very reluctantly, we organized as a foreign company and commenced business. We began with three ships. We had hardly started before the Belgian government announced that they wanted a line of steamships to New York, and they offered us, after a few interviews, $100,000 a year mail pay if we would establish a weekly service to New York. And they also offered us a rebate of all pilotage, light dues, etc., and assigned excellent terminal facilities, all amounting in value to about $30,000 a year more. We accepted the offer, and we have run the line ever since, with a fair degree of prosperity, steadily increasing our tonnage. About 1888 we were offered the Inman line, a very old line with an excellent good will, that had been running between Liverpool and New York for many years. Mr. William Inman had died and they offered it to us. My directors decided that I might go abroad and undertake the purchase. At that time the Inman Line had one-third of the mail carrying between Great Britain and the United States. There were three sailings in a week—Tuesdays, Thursdays and Saturdays—and the Inman steamers ran on Tuesdays. Knowing that we could not develop that line without a continuation of this mail pay, I sent to the managers of the White Star and Cunard lines, the other contractors, and asked them whether it would be agreeable to them for us to purchase the Inman Line and go on with it. They thought it over and sent word back to me that they hoped we would buy the line. We bought it and immediately commenced upon designs to improve the service, the result being the ships known to you as the New York and the Paris. This was done with 99 per cent of American capital. We went on and designed the New York and Paris, which were the first twin-screw steamers designed for commercial trade. They were the first ships ever built to be absolutely unsinkable, and the first to have such luxurious arrangements on the promenade deck. I mention this to show that we started in courageously to develop that company and give it the right sort of equipment. About the time these ships were partially built the postal contract with Great Britain was about to expire, and we received word one day from the English postoffice department that the government had given careful consideration to the matter and were satisfied that three sailings a week were too much, and that therefore the postoffice proposed to reduce it to two sailings. We were afterwards told unofficially that the English government really did not feel that a company owned entirely by American capital ought to receive mail pay from the British government. That put us in a serious predicament. We had two costly ships nearly finished. Just at that time Senator Frye introduced in the senate and had passed a postal bill, which, unfortunately, was emasculated in the house; but as it was passed it was all that could be had at that time. We were in the predicament of having either to fish or to cut bait, and we decided if possible to act under this postal law. Then we came to congress and said: 'If you will give us the American flag for the New York and Paris we will build two equivalent ships in the United States,' and congress did so. That brings down the narrative to the present discussion so far as our interest is concerned.

"Now I want to give you the commercial side of this experiment of ours, because it bears on the question of free ships. When we left the British flag and came to the American flag our two ships, the New York and Paris, were enrolled as British admiralty cruisers, and received the subvention allowed to all ships that can be used in the navy. That subvention was £10,500 a year for each ship. This we had to relinquish when we became American.

"Forseeing that some day we might become American, the British government stipulated to retain one year's pay, so that when we became American we forfeited practically two years' back pay, as we forfeited the year overdue and ten months earned for the current year when we changed the flag. If we had built those two ships under the British flag (the St. Paul and the St. Louis), the Britsh government then would have given us $220,000 a year for the privilege of enrolling the four steamers and calling for them as admiralty cruisers. We sacrificed $220,000 back pay, which, divided by ten, is the equivalent of $22,000 a year for the period of our United States mail contract. Although the British government would not give us the mails as a contractor, we did get some mail from various sources, averaging £675 a voyage, equal to $175,500 per annum, which we lost from becoming American. Our postal laws require us to carry eleven cadets and a mail master, and to keep a sorting room, and we have to maintain these persons. I have carefully computed the value of that service and I find that we have lost space worth $24,700 per annum from this requirement. Again, you have a law which requires us to run our ships once a week throughout the year, and to run 20-knot ships, not allowing us to substitute slow ships in winter, as other governments allow. The extra cost of maintaining that service during the winter months is not less than $100,000 per annum. There is no volume of passengers in the winter months that will support such ships. All the other companies ship in slow boats and their governments permit or overlook it. If we had built the St. Louis and St. Paul in Great Britain instead of in the United States, we could have procured them for $1,100,000 less money than we had to pay for them. There is a perpetual loss on that increased investment for insurance, depreciation and interest equal to $165,000 per annum. We had to pay interest at the rate of 6 per cent for borrowed capital, as the people in this country who have money to invest are not accustomed to steamship securities. That is not the case in Great Britain, where you can get money more readily on steamship investments than on almost any other security. The banks of Great Britain live largely on the interest which they receive on loans to ship builders and ship owners. This additional $1,100,000 of extra cost of the two ships built here, for the life of the ships, for depreciation, insurance and interest, amounts to $165,000 per annum. Those two ships, if built in Great Britain, would have cost us $4,000,000; but in this country they cost us $5,100,000. We had to pay 6 per cent interest on the bonds we sold to get money to pay for these ships. In England we would not have had to pay over 3½ per cent, so that on this item we lose $100,000 per annum. The lesson that I am trying to teach is that no man, or organization of men, can run ships under the American flag in competiton with ships run under the British or German flags. I do not say that the American ship owner may not live under such competition, but he will never be able to expand and grow under these adverse conditions. The sum of the debts to this account against our four mail boats for one year's work is $861,540, while on the credit side is only the $757,000 which the government gave us for carrying the mails, and we are out of pocket $104,540 per annum, because we elected to be under the American flag rather than remain under the British flag for this service. As a matter of fact (in answer to a question as to whether his ships were running at a loss) we do make some money, but not much. We have always paid the interest on our bonds, and kept our fleet in first-class condition, but we have never made money enough to pay a dividend to the stockholders since we had the four mail boats. The annual difference in wages on the four ships is $54,340 more than if operated under the British flag.

"I have submitted a correct statement of the results of running our ships under the American flag compared with what it would have been if we had not had the patriotic desire to be American, if I may say so. Of course it is obvious that we will not enlarge the experiment. I do not mean that we will quit the business, far from it; but I mean that we can not afford to carry on this experiment. These four ships will run until they are sold or replaced, but our annual expansion will necessarily be under foreign flags, where the conditions are more favorable, unless congress supplies the remedy.

"When the New York and Paris were put under the American flag I asked the postmaster general to inform me what mail pay he could give us under the law as it stood, outside of the postal laws, providing the mails were fairly massed on our sailing day on our ships—that is, if we were to get all the Wednesday mail how much money would we get. Here is his letter, in which he says $600,000 per annum. I took that letter back to my directors and said: 'Look here, will you make a contract agreeing to carry the mail for ten years, agreeing to run winter and summer, when, if the government be friendly, you can by law get $600,000 a year mail pay and avoid making a contract which will give you only $150,000 more per annum, no speed requirement, and no auxiliary cruiser obligations?' We had several board meetings, and finally we made up our minds that we would take the contract, for the reason that we might sometime or other be confronted by a postmaster general who would not mass the mails so that we could earn $600,000 a year. That is the consideration which made us take the contract.

"I have told you this story about the postal business because there has been an impression that we were receiving enormous sums of money for carrying the mail. As a matter of fact, we are only getting $150,000 more than we could get without the postal law, for which our government got four auxiliary naval cruisers, the value of which has been recently determined."

NEW TUG CONTRACT AT BUFFALO.

It is announced that Capt. Edward H. Maytham of Buffalo, will build a tug to replace the T. M. Moore, burned at Grand Island last December. The burned vessel was in the service of Dunbar & Sullivan on Buffalo harbor improvements last season, and the new vessel, which will be named the Triton, will be similarly employed. The tug will be 62½ feet in length, 15 feet beam and 8 feet depth of hold. The hull (wood) will be constructed by Thomas O'Grady. The tug will be of the rocker keel type and the fore-foot will be well cut away below the load water line. The deck beams will be notched upon the shelf pieces in order to better enable the vessel to withstand the severe crushing strain to which such a craft must inevitably be subjected. Three heavy oak deck beams will be notched upon the shelf pieces at proper distances, the reverse strain being taken by three heavy tie-rods, extending from side to side and set up with turn-buckles. The tow bitts and timber heads are to be of steel. The vessel will be fitted with a rectangular fire box marine boiler, manufactured by Riter Bros. & Co. It will be 10 feet in length by 6 feet in diameter with 150 pounds pressure. The boiler will be fed by a Worthington heavy pressure, duplex outside-packed piston pump 6 x 3½ x 6, through a National feedwater heater containing a double coil of copper pipe. There will be two Penberthy injectors, and the method of independent boiler feeding will allow the engine to turn free and unencumbered. The engine, which will be built by Sutton Bros., will be 15 inches cylinder by 17 inches stroke, and will turn a propeller wheel 5 feet 9 inches diameter by 5 feet 8 inches pitch. The agreement with Dunbar & Sullivan calls for the completion of the tug by April 15.

French naval authorities have given no little attention since the conclusion of the Spanish-American war to the subject of the utility of steam yachts for service as auxiliaries. M. Lockroy, the minister of marine, is corresponding with yacht owners with a view to making arrangements for the use of their vessels if required as auxiliaries of the Red Cross Society.

MORE ORDERS PLACED.

AMERICAN SHIP BUILDERS SECURE COMMISSIONS FOR SEVERAL GOOD-SIZED VESSELS.—THE CRAMPS TO BUILD A NEW STEAMER FOR THE PLANT LINE.

The Wm. Cramp & Sons Co. of Philadelphia has secured a contract from M. F. Plant, vice-president of the Plant system, for the construction of a steel twin-screw steamer which will have greater passenger accommodations than any American steamer afloat, with the exception of the large transatlantic liners. The vessel will be 400 feet in length by 50 feet beam and designed for a speed of 18 knots. Frank S. Martin of the Plant Co. will superintend construction of the vessel, and work will be pushed as rapidly as possible. The steamer Mascotte of the Plant line goes to the Cramp yard for a thorough overhauling. The keel for the new United States battleship Maine will be laid on Feb. 15, the anniversary of the disaster in Havana harbor, and the Cramps announce that efforts will be made to have work on the vessel sufficiently advanced so that she may be launched Feb. 15, 1900. Plans for the new dry dock at the big Philadelphia yard are now being drawn, and construction will begin in about two months. The dock will have attached a complete repairing plant, permitting of repair work being done without drawing on the main shop.

Activity continues in Maine yards. Dunn & Elliott of Thomaston, Me., have just contracted to build a wooden schooner for Bisbee Bros. The steel sailing ship Arthur Sewall, building at the yard of Arthur Sewall & Co., Bath, Me., will be launched within a few days, and the stocks will be immediately occupied by another similar vessel. The New England Co. of Bath, has material for three additional barges for the Consolidation Coal Co., and work will commence as soon as the two now under construction are out of the way. Kelley, Spear & Co. of Bath, who are busy on barges for the Staples Coal Co. of Taunton, Mass., state that they have orders on hand that will enable them to put down new keels as soon as the vessels named are launched.

In New York shipping circles a general impression prevails that the incorporation of the Munson Steamship Line with a capital of $750,000 by Walter D. Munson, Carlos W. Munson, Edward F. Geer, Alfred H. Bromell and Charles S. Haight, means that the interest controlled by these gentlemen, and which have heretofore been engaged solely in the Cuban trade and Mexican business, will be extended to take in the South American trade. Of the capital stock of the new concern $150,000 is preferred, entitled to 8 per cent cumulative dividends, and $600,000 common stock. It is stated that the company will build several fine steamers for service on different routes.

Chicago capitalists recently made a proposition to Councilman M. Zier, one of the leading manufacturers of New Albany, Ind., to establish at that place an extensive marine railway and structural iron plant for the construction of steel vessels, particularly for river service, provided the citizens of New Albany would indorse $1,000,000 of 5 per cent bonds. Mr. Zier has brought the matter to the attention of the Commercial Club, the leading commercial organization, and a meeting was held at which the Chicago gentlemen presented their plans. Action was deferred pending a fuller investigation of the project.

The Moran Bros. Co. of Seattle, Wash., recently made prominent through the creditable record of the torpedo boat Rowan, has just secured a contract for a vessel that is to be known as the "flagship" of the towing fleet of the Puget Sound Tugboat Co. The vessel, which will be of steel, will be 128 feet in length, 25 feet beam and 14½ feet depth. Power will be furnished by triple expansion engines with cylinders 16, 24 and 40 inches diameter; scotch boilers of 160 pounds working pressure. The vessel is to be ready for her trial trip in July. It is understood that the contract price is in the neighborhood of $100,000.

The Maryland Steel Co., Sparrow's Point, Md., will build two large steamers for the Boston Towboat Co., instead of one as originally announced. The Maryland company has the keel laid and the frame partly up for the steel propeller for the New York & New Haven Steamboat Co., while the three torpedo boat destroyers and the Baker-Whiteley Coal Co.'s steel tug Brittania have been laid down in the mold loft and the material is being prepared to lay the keels.

A special from San Francisco states that John D. Spreckles, president of the Oceanic Steamship Co., is on his way east to obtain estimates and probably place orders for the construction of three 6,000-ton 17-knot vessels for the Australian and Hawaiian trade. His estimate of the cost of the new fleet, as given to the stockholders, was $735,000 per vessel.

The Merritt-Chapman wooden twin-screw wrecking steamer Champion has been launched by A. C. Brown & Co., Tottenville, S. I. She is 130 feet long, 35 feet beam and 11 feet deep; engines by John W. Sullivan; two Scotch boilers by Heipershausen Bros.

The Harlan & Hollingsworth Co., Wilmington, Del., has just closed a contract with the Windsor Line, running between Philadelphia and Boston, for the construction of a steel steamer 285 feet long, 45 feet beam and 26 feet deep.

The Florida East Coast Railroad Co., which had the steamer Miami built at the Cramp yard, Philadelphia, something over a year ago, will, it is understood, soon place a contract for another large steamer, and it is thought the contract will go to the Cramps.

Secretary Long has decided to withhold the award of the contract for a new drydock at Algiers, La., until the house committee on naval affairs has had an opportunity to consider a pending proposition to change the authorizing act so as to permit of the construction of a concrete dock instead of a floating iron structure. The latter was to have cost $850,000, while the former, which would be of much greater value from a naval standpoint, would cost, according to the department's estimates, $1,400,000.

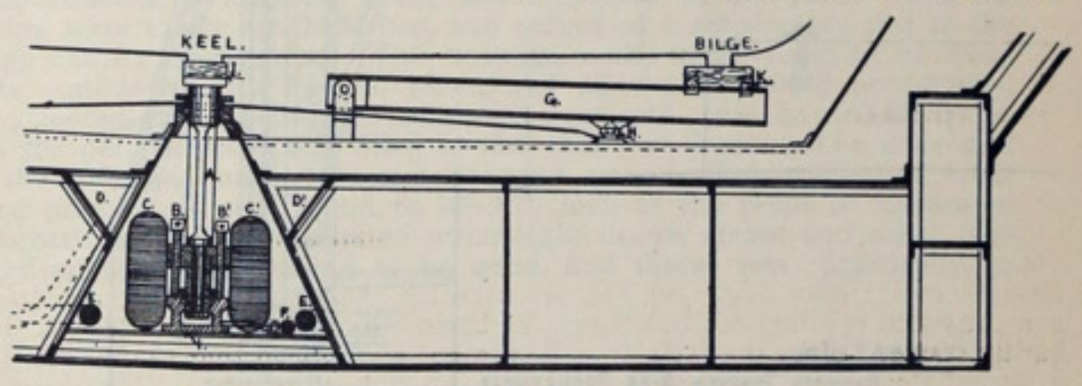
Stewart Murray, general freight agent of the Northern Steamship Co., has been appointed general freight and passenger agent of the company with offices in the Prudential building, Buffalo. As previously noted, Mr. I. M. Bortle has resigned the office of general passenger agent on account of the consolidation of the freight and passenger departments.

THE RYDER DRY DOCK.

AN EMPLOYE OF THE NAVY YARD AT WASHINGTON, D. C., SUBMITS TO THE UNITED STATES NAVY DEPARTMENT PLANS FOR A FLOATING STRUCTURE—NOVEL IDEAS IN A SECTIONAL DOCK SCHEME.

The recent adoption by the navy department of a policy looking to the expansion of its dry dock facilities, with the attendate appropriations for that purpose, has induced Mr. C. M. Ryder, formerly of Chester, Pa., but now connected with the navy yard, Washington, D. C., to submit to the bureau of yards and docks plans for a floating dry dock designed to accommodate the largest type of battleships, and which embodies many admittedly novel features. The dock is best described by the specifications upon which the application for a patent was based and which have been elaborated by the inventor for the Review.

It is proposed to construct a dock to meet all needs of the naval service, in the following manner: The dock will be built in three sections, the middle one of which will be 262½ feet long, 14 feet draught under keel

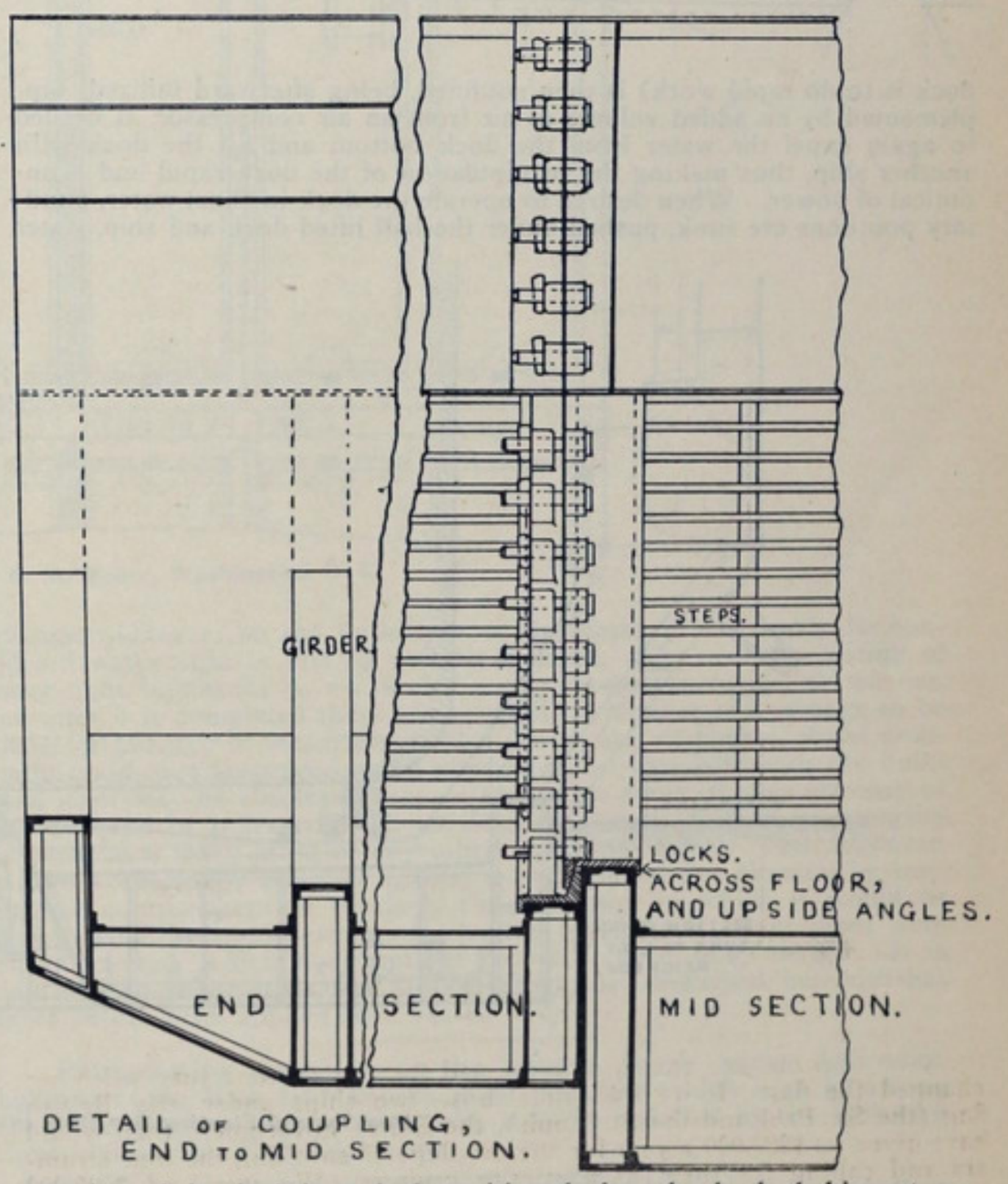


RYDER PATENT PLAN OF BLOCKING.

of ship, and the two end sections of which will be each 131¼ feet long, 9 feet draught.

Each section will be equipped with boilers, pumps, air compressors, dynamos and all modern dock appliances complete. The inner end of one end section will be fitted to attach rigidly to either an end of the mid-section, or to inner end of opposite end section; one end of mid-section similarly couples to one end section, thus forming either one rigid structure 525 feet long, two docks, one 262½ feet long, 14 feet draught, and one 262½ feet long 9 feet draught, or three docks, one 262½ feet, 14 feet draught, and two docks each 131¼ feet long, 9 feet draught, each complete in all appointments.

The outline of the dock sections is such that the middle section will receive and elevate above the water for cleaning or repairs; both end sections, and the two end sections will in turn lift the mid-section. The con-

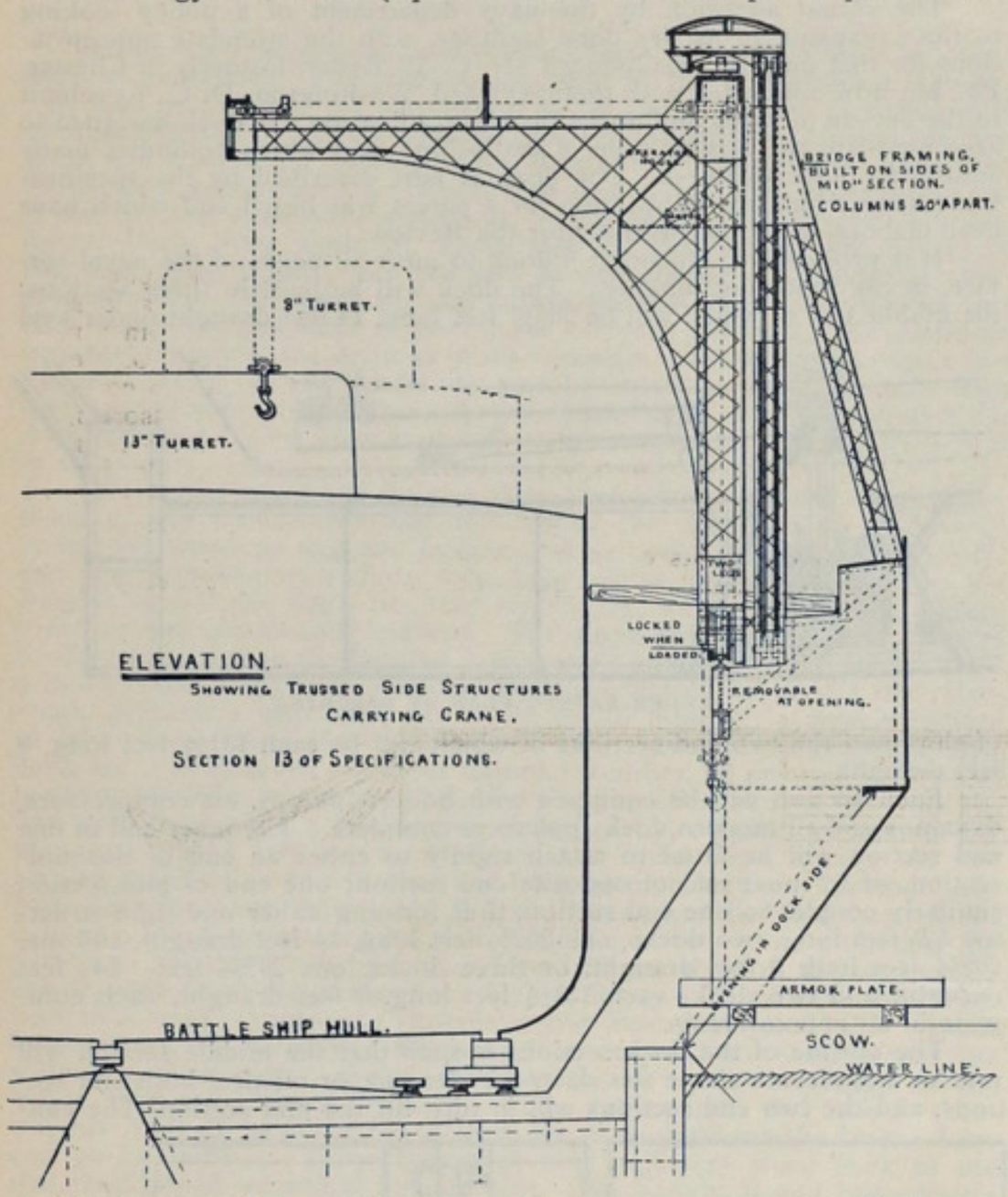


struction of the dock is such that with a draft under keel of ship not exceeding 14 feet, for mid-section, and 9 feet for end sections, a man may stand erect at his work under any portion of the hull of a ship in dock.

The blocking and shores will be of the Ryder design and may be adjusted or removed at any time, or the load on each gauged in all positions of ship or dock, so that an overstrain would be impossible. The shores guide the ship into the dock and place her absolutely within 6 inches of the center under most adverse conditions. Large side openings give light and access to working floor. Provision is made for mounting a powerful derrick, having a range of the entire length of the dock. The dock is designed to meet and care for a crippled ship wherever she may be and will work in a moderate depth of water.

In the operations of the dock, it having a ship in, but ready to leave

the dock, water is admitted to the bottom compartments, and valves are arranged so that the combined weight of the ship and dock in sinking compresses air, expelled from the lower compartments by incoming water, into upper compartments of side structures, the additional water needed to free the dock from the ship's keel being forced in by dock pumps. The stored energy of this air (equivalent to a 300-horse-power plant if the



dock is to do rapid work) is then confined, being afterward utilized, supplemented by an added volume of air from an air compressor, if needed to again expel the water from the dock bottom and lift the dock with another ship, thus making the manipulation of the dock rapid and economical of power. When desired to operate the dock in shoal water, auxiliary pontoons are sunk, pushed under the half lifted dock and ship, water expelled from them, and stability, as well as lifting power of the dock, nearly doubled.

By building and launching the bottom compartments of one 130-foot end section in halves (thus making two floats about 50 feet by 130 feet each), the balance of dock materials may be loaded on these floats, towed to any distance and there assembled complete, the opposite end section being first built on the original two bottoms, floated off, the half bottoms then united and completed on this completed end section, and middle section then built, using the two already complete ends as a float in same manner as large bridges are often built, only a moderate depth of water being required for the operation.

If the self-docking feature be modified to allow the two ends to dock each other, and unitedly, the middle, then the side structures of middle section may be of any preferred form, and may have high stiffening frames above the upper deck, which would also serve as supports for powerful movable derricks with which to handle guns, boilers, armor plates, etc. The depth of the sides as girders would then be 80 feet, giving them great rigidity.

As cleaning and painting is always easily done, steel entirely would be the most suitable material, thus avoiding all local corrosion due to chemical and galvanic action of salt water where two different metals are united in the same structure.

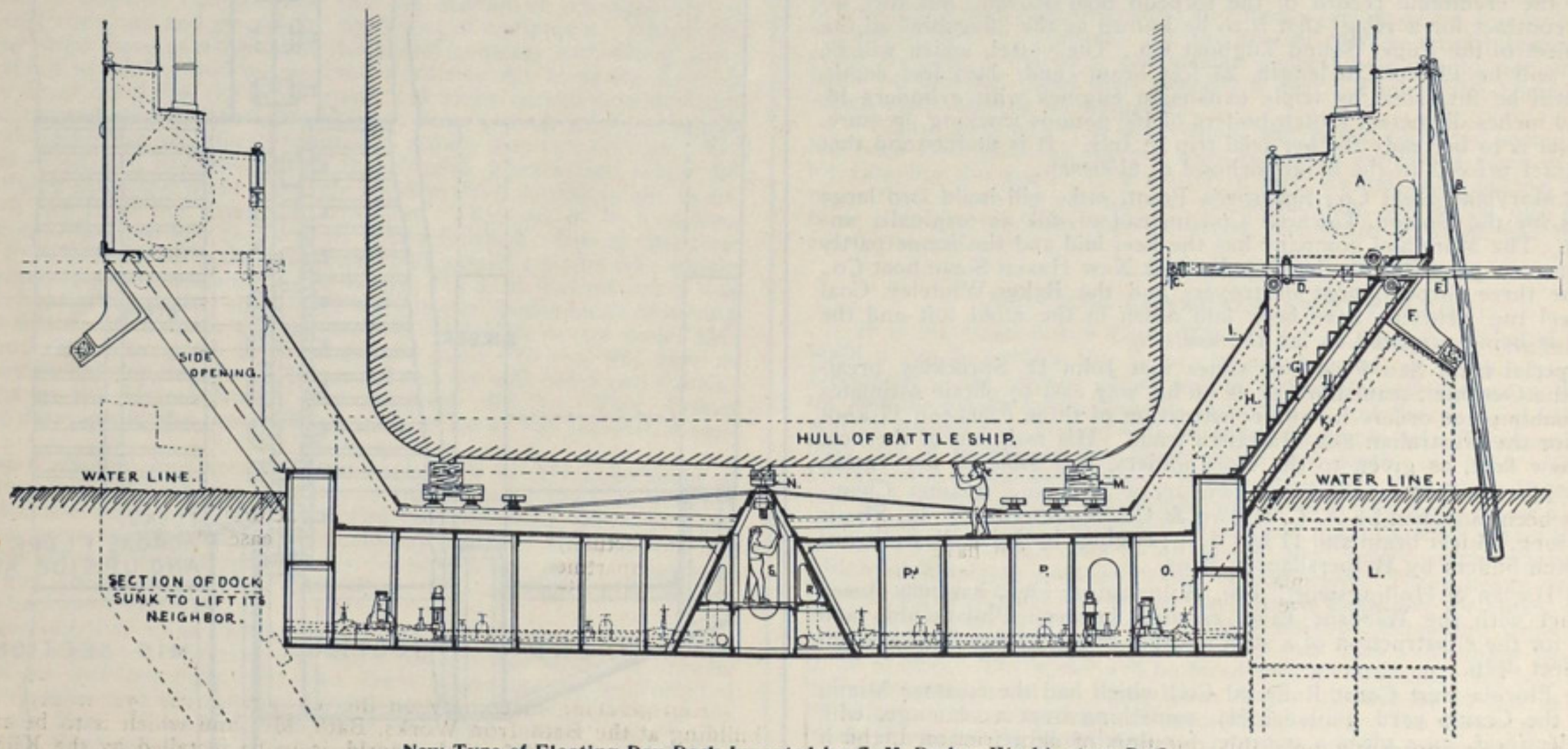
The strains being such as are common to bridge work, materials ought to have a high elastic limit, even at some sacrifice of ductility. Even in gun work this is now recognized, failures being almost universally due to low tensile strength, and seldom due to a lack of ductility, although metal showing but 10 to 12 per cent elongation in 2 inches is often used. Manufacturers of steel have for years had repeated failures of steel reported, which were remedied by substituting harder and less ductile metal, although purchasers were of the opinion that original failure was due to lack of ductility.

The working of the dock is simple and free from risks. Where the different sections have been used separately and are to be assembled, the ends are sunk slightly lower than the middle section, warped up to a tight contact by lines and powerful winches, then lifted until beveled latch castings lock tightly and large key bolts then inserted. The angled sides insure the proper adjustment of the end sections, even if warping lines bring them together 10 feet from central position. The ship slides into the dock in much the same manner that a ferry boat enters her slip, except more slowly. The side shores and adjustable string pieces form guides, which may be locked within a few inches of the ship's central position in dock, or may be used to exert a stated pressure against her sides when entering.

All the supporting blocking is carried on compound jack screws capable of lifting 50 tons each, but all of which may be adjusted during the period when the ship is being lifted, there being passages through the box girders which form the frame of the dock bottom; through these men may pass at any time and into them the lower ends of jacks extend. All water gates and valves are in duplicate and are also accessible from these passages, and may be inspected, packed or ground at any time when the dock is not being emptied or filled. There are but two sea cocks to each section. The utilization of the sinking energy in subsequent lifting is a new and simple application of a well-known law. Under the moderate working pressure there is no easier thing to manage than air compression, and as the work and the stored energy depend on the same circumstance, namely, depth of immersion, there is always a natural equilibrium.

MONSTER RAFT CRADLE.

Considerable attention was attracted last year by the monster rafts of logs which were built on the Pacific coast and towed from Puget Sound ports to San Francisco. Now preparations are being made to repeat the operations during the coming season, and with that end in view the Robertson Raft Co. has just launched at West Seattle, Wash., a monster raft cradle—or rather half of it, for the size of the structure makes it necessary to launch in two sections of over 300 feet each. The cradle will be 650 feet in length, 58 feet width and 30 feet depth. There will be more than 300,000 feet of timber in the structure, and the Puget Sound mills have furnished for it 1,729 sticks, averaging 175 feet. The largest pieces are 9½ x 24 inches. It is expected that the first raft to be constructed in the new cradle will contain fully 12,000,000 feet of lumber, and to this may be added a deck load of from 4,000,000 to 6,000,000 feet.



New Type of Floating Dry Dock Invented by C. M. Ryder, Washington, D. C.

The ship master has use for a large pocketbook in which to carry bills, receipts, currency, etc. He wants it large and durable but no more sumbersome than is necessary. H. A. Foss, board of trade weighmaster at Chicago, has planned just the kind of book that the captain needs, and is sending out a limited number of them with his compliments to the masters of vessels that engage in the lake trade. The book is made of the best leather, and is of a kind that could not be procured from stationers, as it was prepared specially for the use of vessel masters.

SKIN FRICTION.

A WELL KNOWN NAVAL ARCHITECT AND THE INVENTOR OF THE KNAPP ROLLER BOAT DISCUSS EDISON'S COMMENTS ON THE SUBJECT.

The publication in the last issue of the Review of the comments of Edison, the great electrician, on the subject of skin friction has brought out an expression of views from a Chicago naval architect and from the inventor of the Knapp roller boat, which was illustrated and described in the ship building edition of the Marine Review. The communications follow:

Editor of Marine Review:—In your last issue a great man brought forward an old idea for overcoming skin friction, and judging from the number of people who have spoken to me of the matter, the article created a great deal of comment. As a practical sailor, I have experimented with grease in all forms on the bottoms of racing yachts, and ended by throwing up the whole idea.

But as an illustration of what Mr. Edison's idea would require, I made some figures covering a four days' trip at 30 knots of an ocean greyhound, calculating on a surface of oil one-one-thousandth part of an inch in thickness distributed over her path, and find it would require 4,378 tons; all this to say nothing of the cost which would be at least $40,000. Then, too, some inventor would have to find a method of carrying the oil, with the necessary machinery to apply it.

Chicago, Ill., Feb. 8 ,1898. NAVAL ARCHITECT.

Editor Marine Review:—In your issue of Feb. 2 I have just read with some interest an article headed "Edison on Skin Friction." Mr. Edison, like a great number of marine architects, is in error in considering skin friction as a retarding element in vessels of the Campania class. Of course at 20 knots speed skin friction exists, but it cuts very little figure. At 10 knots probably half the power of the engines is required to overcome skin friction, but at 20 knots nearly all the power is consumed in forcing the plough through an incompressible substance. This resistance increases as the cube of the velocity, and the reduction of skin friction by oil or any other method would have very little effect on the progress of the vessel.

Mr. Edison's remarks are true only when applied to very low rates of speed. Model experiments are very misleading. In driving a vessel at 20 knots you have to divide the water; in other words you have got to make a hole there equal to the displacement of the vessel; and as the water is incompressible, you cannot move the millions of tons horizontally, and therefore require power sufficient to lift an equivalent of the water displaced by the boat at the bow into the air, which is done in the form of waves.

The eminent French engineer, M. Bazin, in dealing with the subject as he did in his vessel on hollow discs, thin at the circumference and thick at the center, had apparently only this question of skin friction in his mind; but although his discs were revolved from power applied to each axle (thus reducing this resistance), as soon as he obtained a speed of 8 miles an hour he found that the reduction of skin friction was of no further assistance to him; and hence he failed, because still his boat was a plough. F. A. KNAPP.

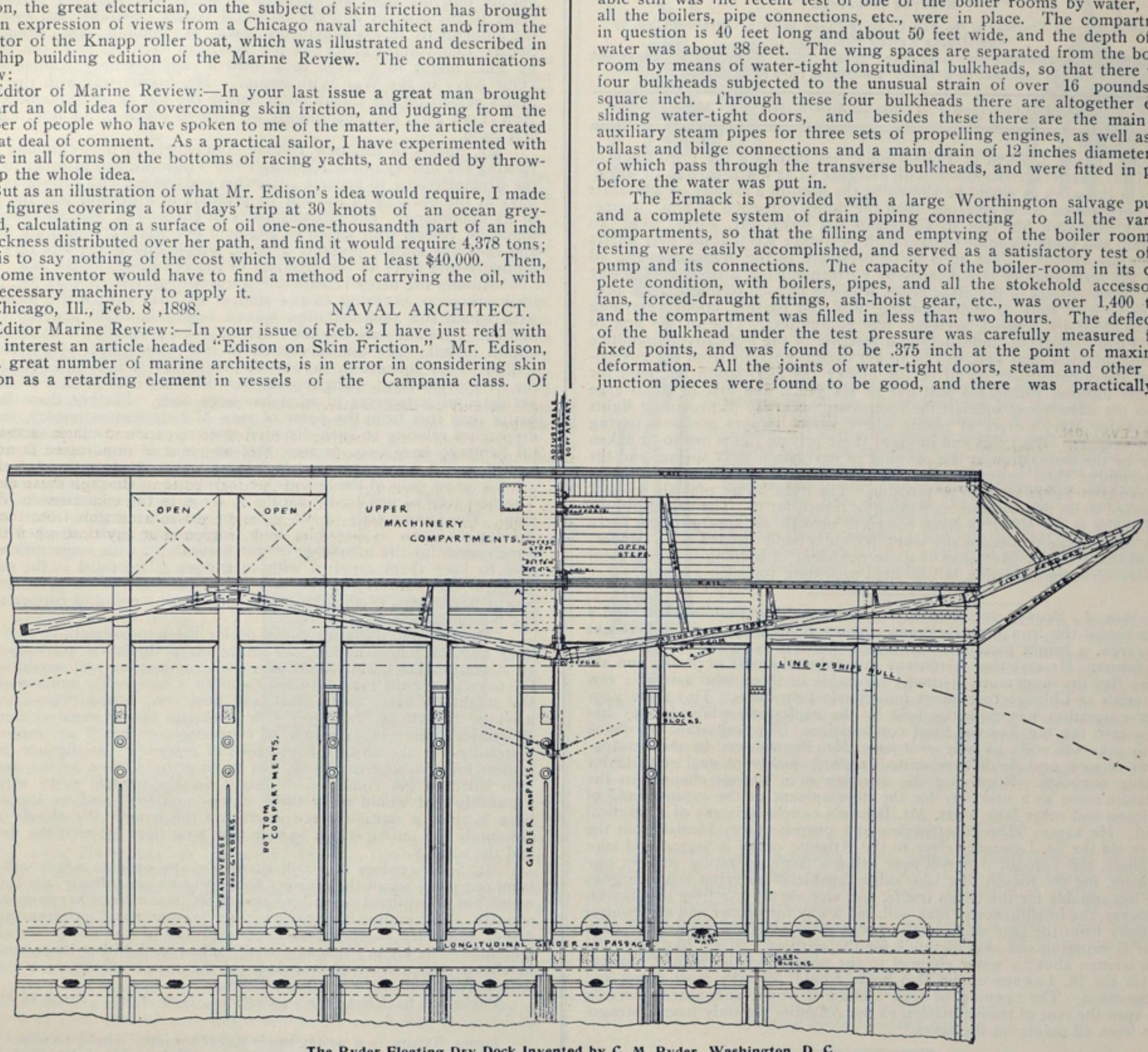
Chicago, Ill., Feb. 8, 1898.

A visit to the national capital may be enjoyed without extra cost for fare in going to Philadelphia and New York over Pennsylvania short lines. Tickets to those points via Washington may be obtained at same fares as apply over Pennsylvania direct lines, and will be good for ten days' sojourn at the national capital. For particular information apply to Pennsylvania lines ticket agents or address C. L. Kimball, assistant general passenger agent, Cleveland.

SEVERE BOILER ROOM TEST.

In describing and illustrating, some time ago, the ice breaking steamer Ermack, building in England for the Russian government, the Review made mention of the severe tests to which the water-tight compartments were subjected to insure their watertightness. More remarkable still was the recent test of one of the boiler rooms by water, after all the boilers, pipe connections, etc., were in place. The compartment in question is 40 feet long and about 50 feet wide, and the depth of the water was about 38 feet. The wing spaces are separated from the boiler-room by means of water-tight longitudinal bulkheads, so that there were four bulkheads subjected to the unusual strain of over 16 pounds per square inch. Through these four bulkheads there are altogether eight sliding water-tight doors, and besides these there are the main and auxiliary steam pipes for three sets of propelling engines, as well as the ballast and bilge connections and a main drain of 12 inches diameter, all of which pass through the transverse bulkheads, and were fitted in place before the water was put in.

The Ermack is provided with a large Worthington salvage pump, and a complete system of drain piping connecting to all the various compartments, so that the filling and emptying of the boiler room for testing were easily accomplished, and served as a satisfactory test of the pump and its connections. The capacity of the boiler-room in its complete condition, with boilers, pipes, and all the stokehold accessories, fans, forced-draught fittings, ash-hoist gear, etc., was over 1,400 tons, and the compartment was filled in less than two hours. The deflection of the bulkhead under the test pressure was carefully measured from fixed points, and was found to be .375 inch at the point of maximum deformation. All the joints of water-tight doors, steam and other pipe junction pieces were found to be good, and there was practically no leakage whatever; so the bulkheads of the Ermack may justly be considered water-tight in fact as well as in name. The ordinary testing of water-tight bulkheads is, no doubt, somewhat perfunctorily carried out, and after it is completed there are generally a number of openings to be made for passage of steam pipes, etc. These are, of course, made nominally good, but are never tested afterwards, so that, although the bulkhead itself may be absolutely water-tight, some error of workmanship in making pipe or other connections through it may destroy its integrity as much as a leaky seam or any other structural defect. This, however, has been effectually guarded against in the case of the Ermack by testing the compartment in precisely the condition in which it would be at sea, with the single exception that the boilers and steam pipes were left uncovered, which does not, of course, affect the matter. It is claimed that so severe a test as that which is described herewith has never before been applied to a vessel.



The Ryder Floating Dry Dock Invented by C. M. Ryder, Washington, D. C.

Refrigerating machinery on the elegant Payne yacht Aphrodite, building at the Bath Iron Works, Bath, Me., and which is to be among the finest pleasure craft of the world, is to be installed by the Kilbourn Construction Co., Philadelphia, Pa.

George F. Lynn, representing the Richardson Fuel Co. of Chicago, has been making a tour of the lakes in the interest of the Chicago firm. He spent two or three days of the past week in Cleveland.

Directors of the Cleveland & Buffalo Transit Co. of Cleveland, have all been re-elected for another year. They are M. A. Bradley, George W. Gardner, T. F. Newman, H. D. Goulder, R. C. Moody, Daniel Shurmer and George W. Avery.

The battleship Kearsarge, building at Newport News, was subjected to a propeller trial last week.

MARINE REVIEW

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Mr. Frank J. Firth of Philadelphia, has taken up the presidency of the Lake Carriers' Association with evidence of as much care and earnestness in the work as would be shown by the head of a railway or any other big corporation when entering upon the duties entrusted to him. Immediately following his visit to Cleveland last week, Mr. Firth went to Buffalo and spent a couple of days with Secretary Keep going over affairs of the association. That he is to be president of the organization in all that the term implies is indicated by correspondence already under way with other officers of the association, who are pleased to find that he proposes to give time to understanding fully and passing upon everything that is done by counsel, secretary and committees. One of the first of Mr. Firth's efforts, as indicated by a meeting of the legislative committee in Buffalo a few days ago, will be to get back if possible from the government the greater part or all of the money the association has paid for private lighting within the past five or six years, and first of all to urge upon the light-house officials the immediate necessity of providing lights in the St. Mary's river at points where vessel owners are now paying light-keepers. With this end in view, these private lights are to be taken over by the association at the opening of navigation next spring, and the government then urged by the association to substitute permanent government lights as soon as possible. The light house officials will not be asked to do this without something in return for it. The vessel owners will make every effort to have congress provide an appropriation for a new light-house tender for the lakes, which is badly needed. It is understood that Senator McMillan is quite confident of holding in the present sundry civil appropriation bill an item providing for such a vessel.

Wm. L. Brown, president of the Chicago Ship Building Co., and a member of the iron firm Pickands, Brown & Co., presents, in a recent interview, a bright picture of Chicago's position as to the iron trade of the future. He says that conditions governing the cost of production are every day growing more distinctly favorable to those who assemble raw materials at Chicago to convert into finished products. This same view of the situation was evidently held by the capitalists, whose money has gone into the big Federal Steel combination. The important drawback as to coke will soon be fully overcome, Mr. Brown says, by the development of new coal fields producing standard quality of coal suitable for coking purposes. Regarding the question of a 20-foot channel to the Atlantic coast as a necessity for the development of the export trade of Chicago and other lake ports, Mr. Brown's conclusions are of a practical kind. He says: "The construction of a proper water channel from the lakes via the St. Lawrence river to the Atlantic ocean is logical and sure to come, but I doubt if it will ever bring a large operation without one transfer, for the reason that lake ships capable of carrying large cargoes are not suitable for the ocean traffic, and vice versa. As time progresses, however, the intelligence of man will find a way for proper and economical transfer from the lake ships to the ocean ships at given points, and each year is bringing out new methods for the purpose. Much has been said and written about a water channel to the ocean, but the natural channel is via the St. Lawrence, and that route would be the most direct and economical. The opening of such a channel would undoubtedly largely cheapen the cost of transportation to the Atlantic, not only from Chicago, but from all points on the lakes."

A resolution has been adopted by the Montreal board of trade recommending that "pending the increase of Canadian tonnage until it is equal to the requirements of the trade originating at Ft. William, American vessels be permitted to load wheat at Ft. William for Canadian ports of export." This means that the Canadians are satisfied that when their canals to the seaboard are completed next year, admitting of the passage of vessels carrying about 2,500 tons, they will find themselves with only a few ships on the lakes suited to the advantages of this trade. But it is quite certain that they will adopt some measure of legislation favorable to the construction of vessels of the canal type. In the meantime they propose to allow vessels of the United States to enter the Canadian coasting trade, carrying grain from Ft. William to Canadian ports on the lower St. Lawrence, but they ask in return for this that the international commission at Washington agree upon some modification of the coasting laws of the United States on the lakes. It is not probable, however, that this latter request will be granted, as there would be too much opposition from the important lake interests of the United States, on the claim that Canada has few ships on the lakes and little to offer in a return for the division of export grain business sought in the proposal from Montreal.

The question has often been asked "How did Mr. L. T. Chamberlain, United States commissioner of navigation, appointed by Mr. Cleveland, manage to hold over under the present administration, in view of repeated changes made in the office in the past?" The answer is simple. Mr. Chamberlain is an exceptionally efficient man in the place. The commercial organizations of the country, and especially the associations of vesselmen on the lakes and seaboard, were aware of Mr. Chamberlain's ability, and they were not backward about speaking of it to President McKinley. This influence, added to the efforts of strong personal friends, kept Mr. Chamberlain in office. His labors in connection with the important shipping measure now before congress prove that no mistake was made.

OUR NAVY IN THE WAR.—SPEARS.

The American navy has recently gained in John R. Spears another historian who is quite worthy to rank with Theodore Roosevelt and Prof. Maclay. Mr. Spears was formerly a newspaper reporter. He was educated at Annapolis, and his early training for the navy was such as to inculcate into his work an attention to detail that not only enhances its value to the student and the technical reader generally, but establishes the authenticity of the statements made as nothing else would. Mr. Spears' four-volume history of the American navy has just been followed by what might in a sense be termed a supplementary volume entitled "Our Navy in the War With Spain." Mr. Spears was with the United States vessels off the Cuban coast during the war as correspondent of the New York Sun, and accordingly he secured much of his information at first hand.

Mr. Spears in this new volume commences at the beginning by reviewing the history of the Aspinwall and Virginius, and in order to enable the general reader to become somewhat conversant with the status of our navy at the opening of the war he presents in a general way the history of its upbuilding. The circumstances of the search, and purchase when found, of vessels with which to augment our naval strength are detailed, and then the author presents a plain, simple and direct but very entertainingly-told story of the progress of the operations of the war.

"Among the many remarkable features of this war," says Mr. Spears, "few are more cheering to the student of history than the promptness with which the administration spread before him the material that he needed. And not only was the material given promptly; it was also given almost in full. The official reports of the commanders of our ships, as well as of our squadrons, were made public almost as soon as received by the navy department. The reports were in every case at once modest and yet detailful statements of what has been done. Further than that, and better than that from the point of view of a student of history, so many despatches relating to such disputed matters as the conduct of the battle off Santiago have been printed, that no point of importance is now unsettled.

"A word only of the lessons we learned at Santiago seems necessary. The first tells of the deadly nature of wood in the construction of a war ship. The second tells of the value of quick-firing guns—that we must develop as soon as possible, long, high-power, quick-firing 7-inch or 8-inch guns for the broadside of our battleships, with ammunition hoists able to keep them supplied with cartridges. The third is the need for speed in our battleships, and that is one we have taken to heart. The fourth is the need of sheathing our ships with wood and copper to keep the bottoms clean.

"There is one thing we might do for the improvement at once of the navy and the whole nation—we might make the naval academy free to all American boys who could pass the examination, and would serve in the navy before the mast, as need required, a reasonable number of years. We might fill every petty office and post on board ship—man every machine as well as every gun with graduates of our naval academy. If we retained the present course of instruction—rather if we improved on it steadily—we should then have crews of a grade of intelligence and self-respect hitherto undreamed of. In leaving the service, as the graduates who failed to get commissions might do, they would carry with them a training that would make them superior citizens, and we should soon have in them a naval reserve worthy of the name. We should remove absolutely the un-American barrier that now rises between the forecastle and the cabin."

Mr. Spears enters into a discussion of the benefits which will accrue from our purchase of the cruisers New Orleans and Albany, the former of which has constituted so striking an object lesson since her arrival in this country. The author also reviews our present naval program and furnishes brief but comprehensive descriptions of the naval vessels now building. The history is magnificently illustrated with a large number of handsome plates from photographs of the vessels of our navy, together with portraits of all its leading officers.

Published by Chas. Scribner's Sons, New York. Price $2.00.

James Barnes is a writer upon naval subjects whose treatises almost invariably bear the stamp of careful compilation and a thorough knowledge of the subject in hand. His latest contribution to contemporary literature is entitled "The Hero of Erie," and constitutes a very full biography of Oliver Hazard Perry. The volume is one of the series on "Young Heroes of Our Navy," and presents the biographical data embodied in a manner that will be readily appreciable by readers of all classes. The book is handsomely illustrated with special drawings and engravings.

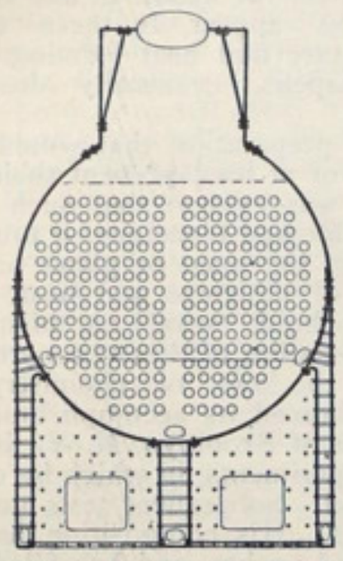
Published by D. Appleton & Co., New York City.

BRITISH ADMIRALTY CONTRACTS.

Contracts for naval vessels recently awarded by the British admiralty constitute in the aggregate the greatest tonnage ever placed at any one time. The vessels will total 112,400 tons and 192,000 horse power, and will cost $40,000,000. The armored cruisers have been assigned to the Fairfield Co., the Clydebank Co., Vickers Sons & Maxim and the Pembroke dock yard, respectively. These vessels will be of 14,100 tons displacement and 30,000 indicated horse power and are to attain 23 knots speed. The cruisers will be 500 feet long, while the battleships will be 405 feet between perpendiculars and 75 feet beam, with 14,000 tons displacement on a mean draught of 26½ feet. The engines are to be of 19,000 indicated horse power and calculated to drive the vessels at a speed of 19 knots. This means an expenditure, under natural draught conditions, of 1.28 i. h. p. per ton of displacement, or exactly the same ratio of power as is required for 18 knots in the new French, American and Russian battleships. The figures for the latest German battleship is 1.16 i. h. p. per ton at a speed of 18 knots. The British cruisers are to attain 23 knots under natural draught for 2.13 i. h. p. per ton of displacement as against 2.53 i. h. p. forced draft per ton of the new French cruisers. The contract for two of the new British battleships goes to the Thames Iron Works & Ship Building Co., one to Laird Bros. and the fourth to Palmer's Ship Building & Iron Co.

BOILER FOR LAND AND MARINE SERVICE.

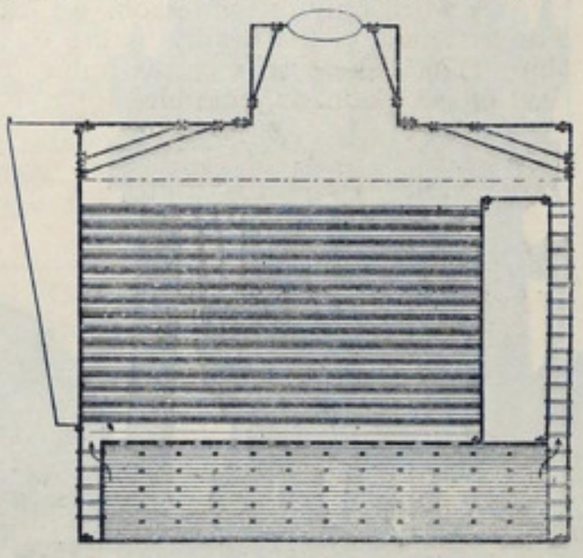
Paragon is the name given to a new type of boiler for land and marine service, recently put on the market by its inventor, Capt. M. DePuy, 19 South street, New York City. Thus far this type of boiler has been used only on canal boats on the Erie canal, but they are adapted to all kinds of service both on land and water. Attention was first drawn to this design of boiler when the steam canal boat Paragon, named after its boiler, towed ten canal boats loaded with grain from Albany to New York City. The combined weight of the ten boats and their cargoes, together with that of the Paragon, was 3,230 tons, which is said to be the largest tow ever brought down the Hudson river by a steam canal boat.



TRANSVERSE VIEW OF BOILER.

It has been a comparatively short time since steam canal boats first made their appearance on the Erie canal. When first put into service they were built to propel only themselves and their cargoes, but in order to make them a profitable investment they have had to be constructed of late years to tow several other boats. One of the most difficult problems met with in the design of canal boats is to obtain a large tonnage with a small draft. The dimensions of the boats are restricted by the limited size of the canal locks. The vessels must not draw over 6 feet, hence the design of their boiler and machinery plays a very important part in their construction.

The Paragon was built by Morgan Bros., at Lockport, N. Y., for the purpose of testing the Paragon boiler. The boat is modeled after boats in general use on the Erie canal. It is 97½ feet long, 17 feet 10 inches beam and 10 feet 3 inches in depth. It is rated to carry 180 tons on 6 feet draught. The engine is of the condensing type, with cylinder 14 inches in diameter and a piston stroke of 16 inches, built by Gordon W. Hall, Lockport, N. Y. The propeller wheel is 6 feet in diameter.



LONGITUDINAL VIEW OF BOILER.

The boiler, which is the novel feature of this boat, was built by the Eagle Boiler Works, Buffalo, N. Y., from designs furnished by Capt. M. DePuy. The illustrations show transverse and longitudinal sections of the boiler. It is 8 feet long, 6½ feet wide, and 12 feet 7 inches high, including ash pan and dome. It has 234 tubes, 2½ inches in diameter and 6 feet long. Its grate area is 26 square feet and its heating surface is 1,135 square feet. It has double furnaces entirely surrounded by water legs, the longitudinal ones extending the entire length of the boiler and connecting with the front and back ones. There is a series of slot openings in the shell over the side and center legs, which permits the water to have a free circulation. As the bottom of the cylindrical shell forms the crown sheet of the fire box, no bracing is required. For cleaning purposes there are provided six hand holes in front and three in the rear, besides a manhole in the steam dome. Cast iron shaking grates are used, being adapted to burn wood, egg or pea sizes of hard coal or soft coal. The boiler is allowed to carry 150 pounds steam pressure by government tests.

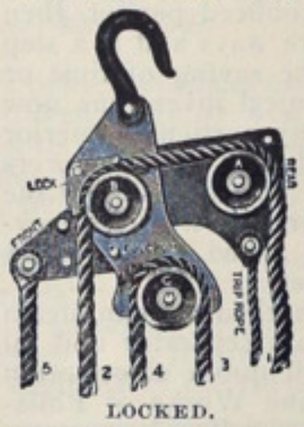
The success of the trial trip of the Paragon was attributed entirely to the boiler. The large amount of heating surface it contains enables it to produce steam rapidly and economically. It is said that it burns by natural draft either hard or soft coal, steams freely and consumes only 1½ tons per 24 hours. At present only half the grate surface is used, thus further reducing the consumption of coal. On the day following the appearance of the Paragon in the New York harbor she was sold to Messrs. George E. Noyes and Nicholas W. Godfrey, of Huntington, Long Island, and was at once put in the gravel trade between Port Eaton and New York and other local ports. One other Erie canal boat, the Arthur D. Bissell, is using this type of boiler, and her owner, Capt. John H. Hawley, is very well pleased with its performance. He says that by its use he is enabled to handle a fleet of boats of much larger tonnage than was formerly the practice.

W. C. Richardson and others of Cleveland have purchased from Capt. James Davidson of West Bay City, Mich., for $70,000 the Chickamauga, one of the largest wooden schooners on the lakes, and which was built at the Davidson yards last year. She is 330 feet in length, 45 feet beam and 26 feet depth. The Chickamauga will tow behind the steel steamer Samuel Mitchell, in which Capt. Richardson is interested with Wm. Chisholm and others, formerly controlling owners in the Cleveland Rolling Mill Co. A corporation will be formed for the management of these two vessels. The Chickamauga is being fitted with a steam towing machine.

The secretary of the treasury has submitted to congress the estimates of his department for the establishment of a course of naval architecture at Annapolis. The estimates are: Four professors, one of naval architecture, one of mathematics, one of mechanics and one of marine engineering, at $2,500 each; one assistant professor of naval architecture at $2,200; one clerk at $1,200; messenger, $400; temporary construction, $2,500; books and periodicals, $1,200.

A RELIABLE ROPE HOIST.

A distinct departure from the old style rope block is embodied in the Burr automatic steel safety lift, which is described herewith. The new block illustrates one of the first principles of mechanics—friction destroys motion. It is used in hoisting, in exactly the same manner as an ordinary tackle block, and when the load is at the proper height locks itself automatically. The means by which the rope is held will be readily understood by reference to the illustrations. When the load is being hoisted the sheave "B" is pulled away from the lock, allowing the rope to run freely. As soon as the hoisting rope is released, the weight of the load, pulling down on the front of the lift, brings together the lock and sheave "B," holding the rope securely. The heavier the load, the tighter it locks, and the consequent impossibility of the rope slipping, even should it be wet or greasy. The inner surface of the lock is perfectly smooth—no teeth being necessary—so there is no possibility of cutting or even slightly damaging the rope. The trip rope, which is used to release the lock, can be operated easily with the foot, leaving both hands free to steady the load, or the trip rope can be dispensed with entirely and the load lowered by pulling up on No. 3 or down on No. 2 or No. 4.



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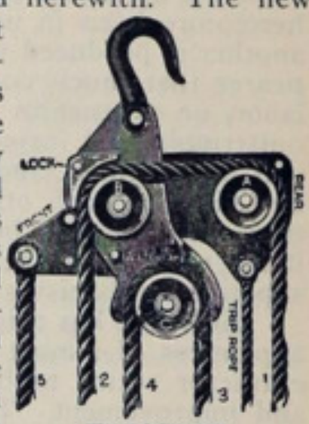
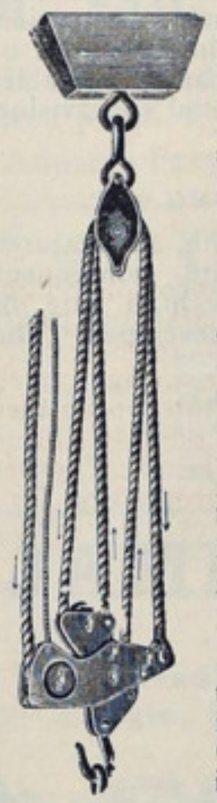


UNLOCKED.

The block can be used upside down or at any angle desired. It will undoubtedly become very popular among sailing men, for handling sails, life boats, etc., as it takes care of the slack rope and can be unlocked much more readily than a rope can be released from the old-fashioned cleat. The Burr block is already in use in several ship yards, railway shops and other places where it is necessary to hoist heavy material. During the past year it has been placed on the market in nearly all parts of the world and is meeting with great favor. The block is manufactured by the Burr Mfg. Co., Cleveland.



BURR LIFT COMPLETE.

The Steel Co. of Scotland has secured a contract for the steel required for the construction of two vessels building for the Red Star line at Clydebank, Scotland. President Clement A. Griscom furnishes the Review with additional information regarding these vessels. They will each be 560 feet long, 60 feet beam and 42 feet depth, to be fitted with quadruple expansion engines capable of developing 11,500 indicated horse power. The boats are to steam 17 knots on a twelve-hours' trial, and are expected to average 16 knots across the Atlantic in ordinary service. Each will carry 400 cabin passengers of two classes, and each will be fitted with accommodations for 1,000 steerage passengers.

KIPLING TO CAPT. ROBLEY D. EVANS.

Rudyard Kipling, acording to the Army & Navy Journal, wrote the verses printed below and sent them, with a set of his books, to Capt. Robley D. Evans, U. S. N. The poet's Zogbaum is Rufus Fairchild Zogbaum, more familiarly known to every officer in our navy as "Zoggy." He is the most popular outsider who ever found a berth in war or peace on board an American man-of-war, and, besides, he draws uncommon good and sailor-like pictures.

Zogbaum draws with a pencil,
  And I do things with a pen;
But you sit up in a conning tower,
  Bossing eight hundred men.

Zogbaum takes care of his business,
  And I take care of mine;
But you take care of ten thousand tons,
  Sky-hooting through the brine.

Zogbaum can handle his shadows,
  And I can handle my style;
But you can handle a ten-inch gun
  To carry seven mile.

To him that hath shall be given,
  And that's why these books are sent
To the man who has lived more stories
  Than Zogbaum or I could invent.

The Standard Oil Co.'s steamer Atlas is almost ready to leave the Roach ship yard, Chester, Pa., on her initial trip. Alike to all other builders who have undertaken the construction of oil carriers, the Chester company has been greatly delayed with this vessel.. The Old Dominion steamer Hamilton, which was recently launched at this yard, is well on toward completion. Her sister steamer, the Jefferson, will be launched about March 1.

It is said that when the sentimental naming of the Yale and Harvard was reported to Admiral Dewey, he was asked if he would not give a collegiate christening to some of the sunken Spanish cruisers when they were raised. "Certainly," said Dewey. "I will call one the Massachusetts Institute of Technology and another the Vermont Normal College for Women."—Army and Navy Journal.

Harland & Wolff of Belfast, Ireland, will lay the keel for a great cargo boat for the White Star Line on the slip vacated by the Oceanic. The cargo carrier will be of greater tonnage than the Oceanic and will be 7 feet broader but 5 feet shorter.

A PERFECT STEAM SEPARATOR AND OIL EXTRACTOR.

There really seems to be no limit to American inventive genius. No sooner is an invention brought forward which is so far ahead of what has heretofore been in use that it is accepted and pronounced perfect, then another is produced which is superior in one or more ways and is a step nearer that much coveted perfect ideal, either in the saving of time or labor, or expense in some other line. With mechanical inventions now outstripping all former efforts, nothing that is in any particular inferior will be tolerated, and inventors work hand in hand with manufacturers and vie with each other in endeavoring to gain the lead and supply the trade with the very best and latest production in their line, with the inevitable result that the standard is continually being raised, and vastly superior mechanisms are being placed on the market.

Nowhere has this inventive genius been more marked than in steam appliances of almost every kind, and lately the steam separator and oil extractor seems to have received more than its full quota of attention and improvement. The Keystone Engine & Machine Works of Philadelphia, Pa., are of the opinion that in Simpson's centrifugal separator they have the best device of its kind on the market, and this opinion seems to be borne out by the general satisfaction expressed regarding the separators they have been turning out. This firm has a reputation for careful work, and in this special line, requiring the highest kind of skilled labor, they have employed none but the best mechanics available. No separator is allowed to leave their works without careful supervision and test.

SUBSTANTIAL TYPE OF MARINE GENERATING SET.

In the design of the generating set illustrated herewith, the features of compactness, accessibility, economy and stability, with consequent lightness of parts, and ability to maintain an excessively high rate of speed during a long period, have been most carefully developed. The engine is two-cylindered, the cylinders having their axes parallel, and being contained within the same casting. The diameter is very large relative to the stroke, the size represented here being 9-inch cylinders with 5½-inch stroke. The valves, which are of the piston type, are two in number, placed in the spandrels between the cylinders, and actuated from a yoke below, which in turn receives its motion through a rocker arm from the eccentric. The valves which operate in unison, are so designed that steam is coincidently admitted to the top of one cylinder and the bottom of the other. The motion of the pistons is transmitted through large piston rods to slipper cross-heads, and thence through marine type connecting rods to the double crank below. The crank pins are set at an angle of 180 degrees, so that the vertical motion is balanced, one crank moving upward as the other moves downward. This feature is instrumental in the securing of a high rotative speed.

Cylinders are supported upon four heavy columns as shown, the rear columns supporting the guides for the cross-heads, and all being securely bolted at the bottom to the very substantial bed casting. This bed carries three main journal bearings, brass bushed in their lower halves, and provided with continuous oiling devices in connection with oil receivers beneath. The interior of the bed forms a basin, which collects all drip from water or oil. The regulator is of special construction, and arranged to operate the valve in such a manner as to regulate the point of cut-off for all loads. It is exceedingly powerful, although sensitive to very slight changes in speed. The connecting rods and cross-heads are of forged steel, the cylinders are thoroughly lagged, and an oil tank is mounted upon each end of the cylinder casting, and provided with individual sight-feed oilers, and connections to the various bearings.

The generator, the armature of which is coupled to the engine shaft, is carried upon a continuation of the engine base and is of the six-pole type, with outboard ring oiler bearing. Its capacity at 425 revolutions per minute (the speed of the engine) is 40 K. W. The field ring is of cast steel. The cores are of wrought iron with cast iron shoes. The armature is built upon a spider, and is arranged for thorough ventilation through internal ducts, extending out through the armature windings. The armature in operation acts as a blower and causes the passage of air through these ducts. The series winding of the field coils is of flat copper ribbon, and the shunt winding is of wire. Both windings are placed on the pole entirely independent of each other, and either may readily be removed. Their design is such as to permit of free circulation of air upon all sides.

The generator is designed for sparkless operation under all changes of load from no load to 25 per cent overload, with a limit of temperature rise to 90 degrees Fahr. after full load run of ten hours. This set was designed and built by the B. F. Sturtevant Co. of Boston, Mass., and is one of a considerable number of types which are now being manufactured by them.

H. B. Roelker, 41 Maiden Lane, New York, has secured an order from the Austrian government for a new type of Allen dense air refrigerating machine for the torpedo gunboat Zenta. He has also installed a refrigerating plant in the Fuerst Bismarck for the German government. A half-ton vertical machine has been placed in the new yacht built by Lawley & Co. of Boston, for C. H. Jones of Boston, and a large machine is being constructed for the Widener yacht, building by the Neafie & Levy Co., Philadelphia, in addition to the several machines that have been sold recently to the United States navy department.

When you are planning to spend the winter and spring in a milder climate, don't forget the attractions presented by California. The Nickel Plate road makes direct connections at Chicago with through lines to the coast. Consult agents of the Nickel Plate if low rates, quick time and unexcelled accommodations are among your requirements 1, Feb. 25.

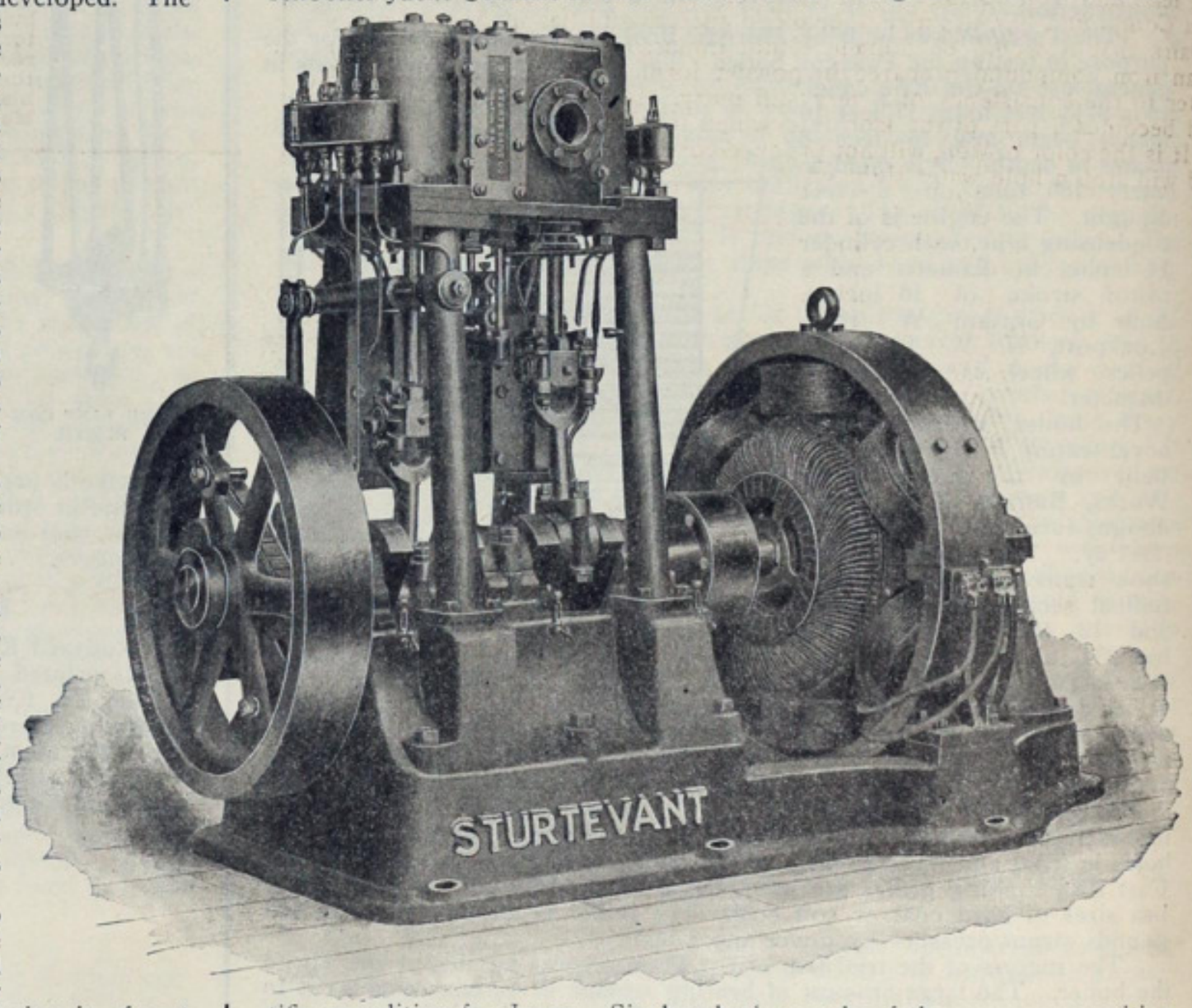
A REMEDY FOR "DRY ROT."

Since the first rude craft was launched ages ago, down to the present time, "dry rot" has been the "thorn in the flesh" of all seafaring men. Every part of the ship exposed to the elements is subject to this disease—certainly an appropriate term—and hundreds of noble craft have gone down at sea or have become direlicts for reasons traceable to it.

The cause of "dry rot" is no doubt known to every one who is at all familiar with the uses of wood. On board ship the masts or deck planks become water soaked and swell, after which, the action of the sun drying them, they shrink and "weather checks" appear. In these "checks" decay begins, the repeated action of moisture and heat forming vapors that eat into the wood as the "check" deepens, eventually destroying completely its vitality and usefulness.

Chemists have searched in vain for a preparation that would either prevent the forming of weather "checks," or at least prevent their deepening and consequent further decay. It was evident that such a preparation or composition must be both flexible and tenacious; it must give readily, without cracking, to the motion of the mast or plank or to its swelling and shrinking from the action of moisture and heat, and it must adhere so firmly as not to release its hold, "scale" or "blister," or crumble under such conditions. The association of these two properties was generally supposed to be contrary to the laws of chemistry, and nearly all identified with that profession claimed its accomplishment impossible. A few years ago Dr. A. N. Cole of Brooklyn, N. Y., brought out a composition, after several years of experiments, in which he claimed to have accomplished the much-desired end. Subsequent tests under all sorts of conditions prove his claim correct. His composition has been used on board a large number of ships and yachts, and has filled every requirement for which it was intended.

One of the most thorough trials given this composition was on the schooner yacht Coronet in 1895 when she was being fitted out for a scientific expedition for Japan. Six hundred pounds of the seam composition was used on her decks, and Capt. Crosby, on his return to Brooklyn, stated that he found the temperature of the different zones had no deleterious effect whatever on the composition, but on the contrary it proved to be so elastic that it yielded to the swelling and shrinking of the deck planks without cracking. It was closely watched, especially when the yacht was in the region of the equator, and it was found that the tropical sun had not the least detrimental effect upon it, and when the Coronet returned from her long cruise not a single crack was visible.



The extraordinary merits shown by tests of this composition led the eminent chemist, Dr. W. H. Morse, to make a thorough investigation and in a letter to Dr. Cole he said that after thoroughly testing the composition he found it without fault or imperfection and absolutely unsurpassed; that it would be quite impractical for a chemist to contrive anything superior; that it will not deteriorate (crumble) in any climate, is not affected by the action of gases and is not dislodged by the action of the boat's machinery. Dr. Morse marvels somewhat at Dr. Cole's success in associating the two properties, tenacity and flexibility, but admits that the composition possesses both.

Seam paint and seam composition possessing these qualities are meeting with rapidly increasing sale as their merits become known to marine men. Messrs. Cole & Kuhls of Brooklyn, N. Y.—foot of Twenty-fourth street—are the sole manufacturers, and will send samples of the composition—enough for a test—to any one writing them.

For a comfortable trip to New York take Pennsylvania No. 6, which leaves Union station daily at 1:40 p. m., and from Euclid avenue 1:50 p. m., arriving New York 7:43 next morning. Pullman's very best sleepers run through on this train without change. Supper is served in dining car. Note that the train stops at Euclid avenue station, saving the tedious ride down town to those living in the eastern part of the city. Phone main 1263 or east 513 for space and full information.

COMMODORE MELVILLE'S OPINION OF HOWDEN DRAFT.

Discussing the outlook in marine engineering in an article in Cassier's Magazine, Engineer-in-chief Geo. W. Melville of the United States navy, says:

"Mr. James Howden, the inventor of the Howden system of forced draft, has done a great deal, not only for the production of greater power from the same weight of boiler, but for increasing the economy with which the steam is produced. His method is to heat the air before admission to the ashpits by means of special air heaters, located in the uptakes. The writer is not aware of any record of evaporative tests which have been made of boilers on this system, so tnat the performance of the boiler could be determined apart from that of the engine, but combined tests have shown remarkably economical results, having been reported as low as 1.25 pounds of coal per horse power with triple expansion engines working at 160 pounds. There can be no doubt of the decided increase of economy by this system, and it is now used on nearly all the large transatlantic steamers, to a great extent on the vessels on the great lakes, and it is being actively pushed on the Pacific coast of the United States."

Messrs. James Howden & Co. recently moved into new works in Glasgow that are especially suited to development of their forced draft specialties.

SMOOTH ON COMPOUND FOR REPAIRS.

In ship, engine and boiler building plants, and more especially on board ship, there is demand for a material that may readily be applied in the form of patches, where fractures occur, and also in the case of boilers and piping for permanent joints, main stay braces, screw stay nuts, etc. Every engineer knows the value of a reliable compound for these purposes, as against the old-fashioned soft-patch cement made of white lead, red lead and iron borings. The discovery and use of Tompkins Smooth On Compound has met with unqualified success and has made easy many repairs that it would be difficult if not impossible to do otherwise. It is an iron compound prepared in powder form, applied by mixing with water to the consistency of a very stiff putty. It hardens in a few hours and becomes a part of the iron into which it is introduced.

It is the color of iron, will not produce corrosive action, is easy to mix, and will stop a hole water tight or steam tight. A detailed account of all that smooth on compounds have been done on repairs would fill a book and the money saved would buy a ship. Further particulars regarding this composition may be had from the Smooth On Mnfg. Co., Jersey City, N. J.

Nine bids were submitted to Maj. Clinton B. Sears, United States engineer at Duluth for dredging in Portage Lake ship-canals. Hingston & Woods of Buffalo, were the lowest bidders. Their bid was $165,476.50. Their bid for dredging on proposition No. 1 is 11 cents per cubic yard, and on proposition No. 2 9 cents a yard. The bid of the Duluth Dredge & Dock Co. was 27 cents on proposition No. 1 and 15 cents on No. 2. Their bid was the highest, $317,054.52. The other bidders were as follows: James Pryor, Houghton, Mich., $265,069.56; S. O. Dixon, Racine, Wis., $280,874.93; Carkin, Stickney & Cram, Detroit, Mich., $209,654.76; Lydon & Drews, Chicago, $182,328.73; John H. Gillett, Marquette, Mich., $240,408.05; Arthur H. Vogel, Milwaukee, $298,203.25; Adolph F. Bues, Milwaukee, $287,158.69.

A modest business card, that of M. W. Fogg, 18 Fulton and 195 Front street, New York, is seen in some of the marine papers. This is a house with a record of more than fifty years of successful business. A specialty is made of bedding, cushions and upholstery for ships, yachts and other craft, this line having been followed since 1845.

The Canalboat Owners' and Commercial Association of New York, is circulating a petition to the superintendent of public works of that state requesting the opening of the Erie and other canals in the state on April 1. In the petition it is stated that great lake vessel owners are very desirous of the earlier opening.

For Sale Cheap— Passenger and Freight Steamer **STATE OF MICHIGAN.**

In good condition. State room accommodation for about one hundred people; very large freight carrier.

Address Peoples Steamship Line, Detroit, Mich. Mar. 2

U. S. Engineer Office, Duluth, Minn., Jan. 16, 1889. Sealed proposals for setting in place concrete footing blocks, and building in place concrete superstructure on south pier Duluth Ship Canal, and for building and piling concrete footing blocks for north pier, Duluth Ship Canal, will be received here until noon Feb. 16, 1899, and then publicly opened. Information furnished on application. Clinton B. Sears, Major, Engineers. Feb. 9

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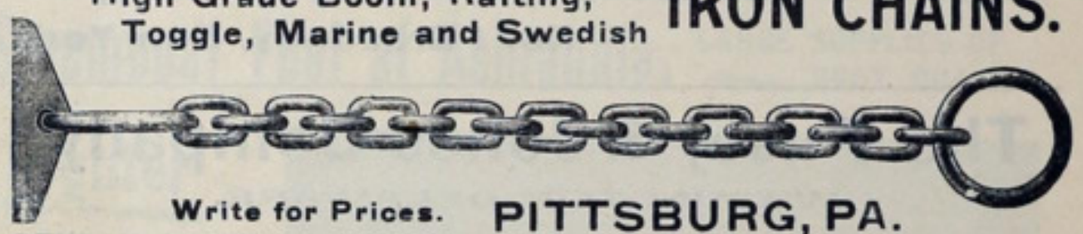
High Grade Boom, Rafting, Toggle, Marine and Swedish **IRON CHAINS.**



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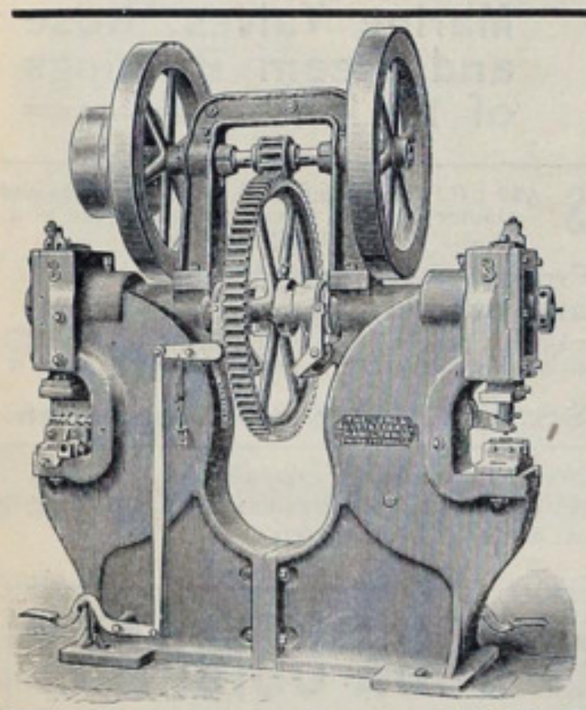
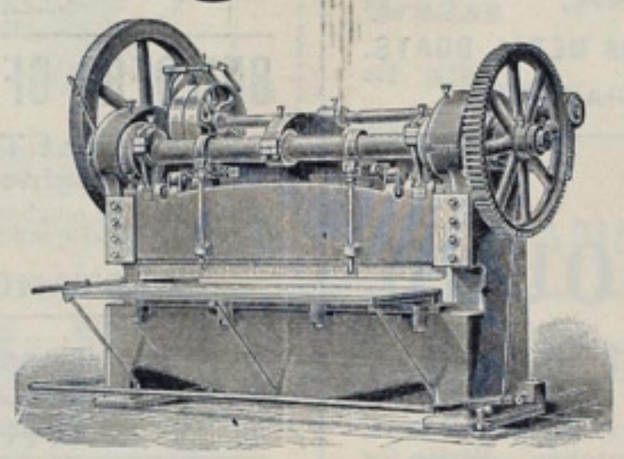
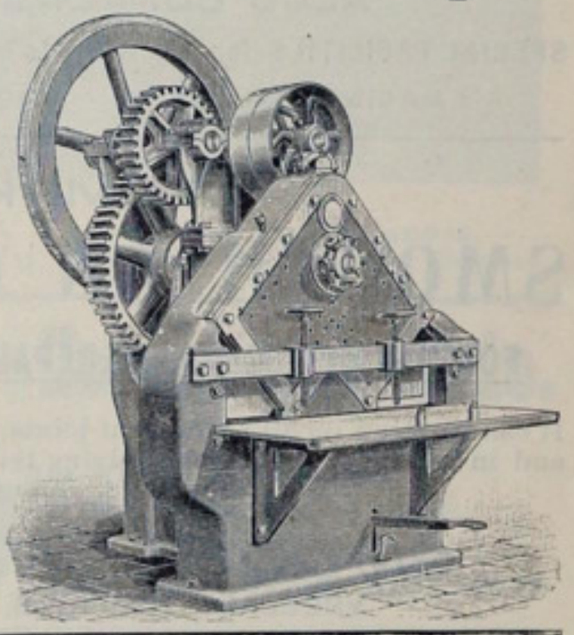


Of All Kinds and Sizes.



Belt, Steam or Electric Driven.



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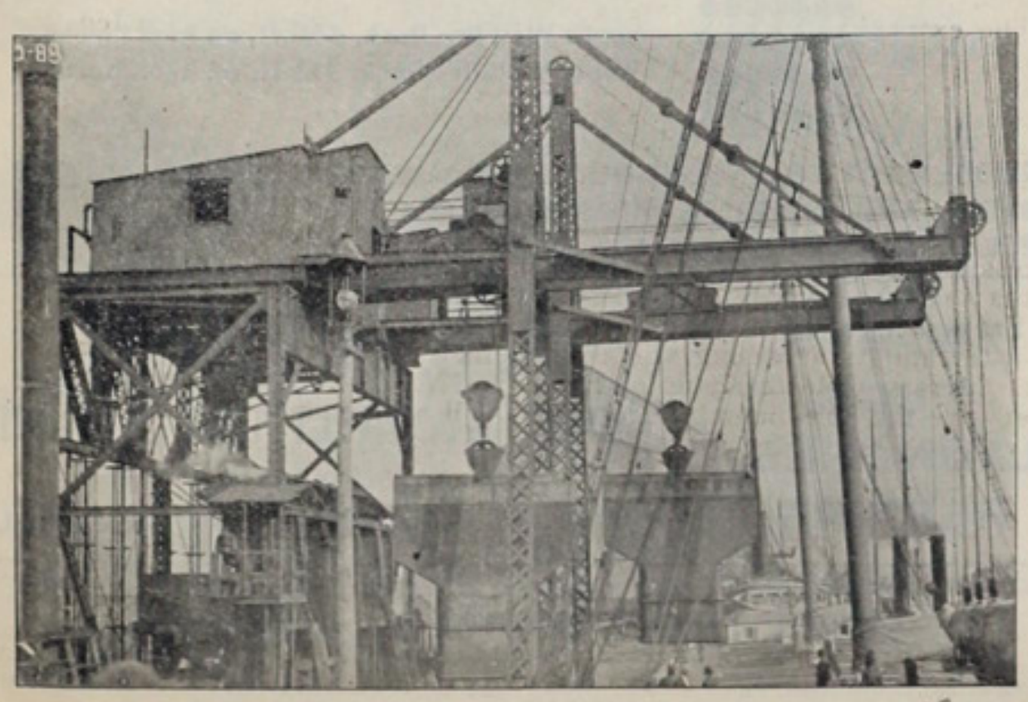

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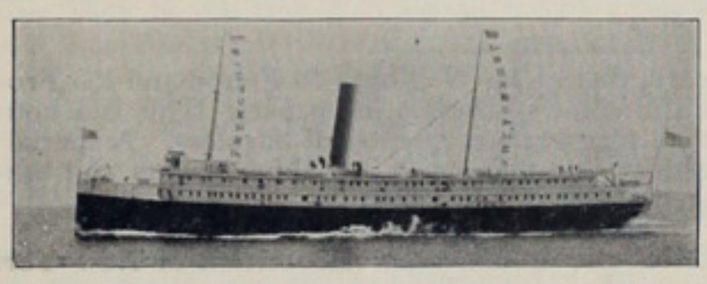

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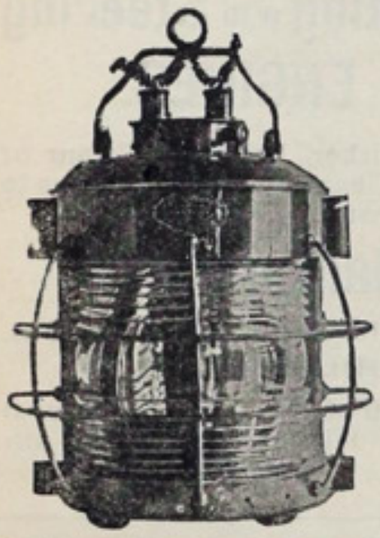

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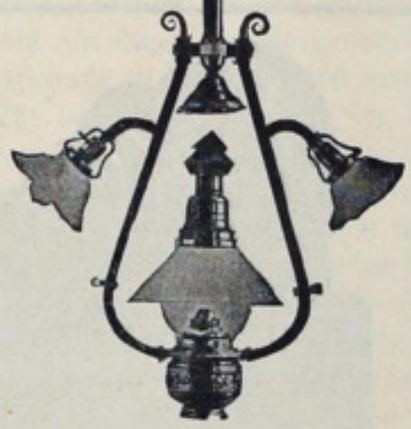

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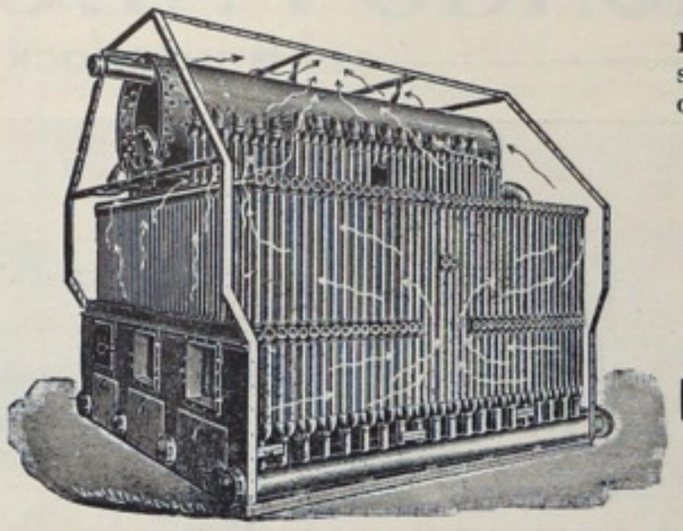

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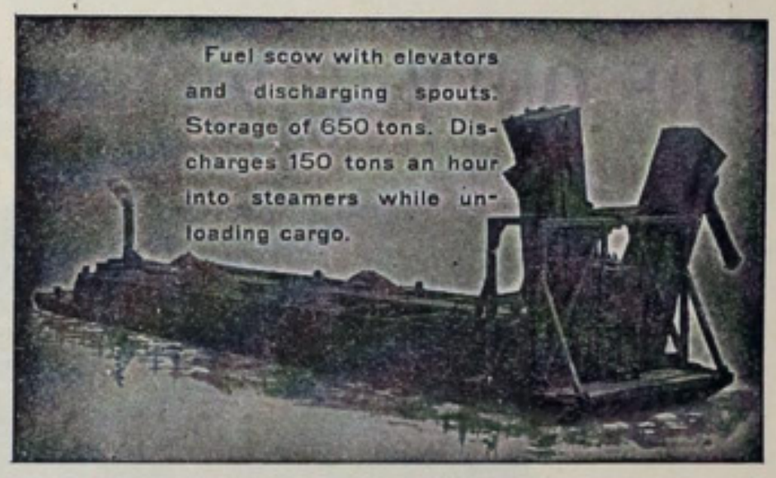
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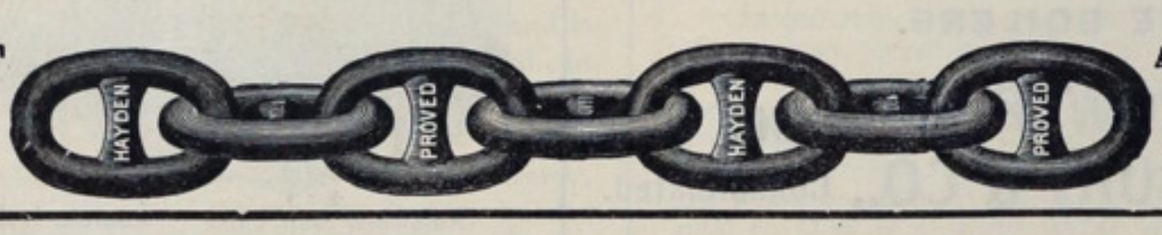

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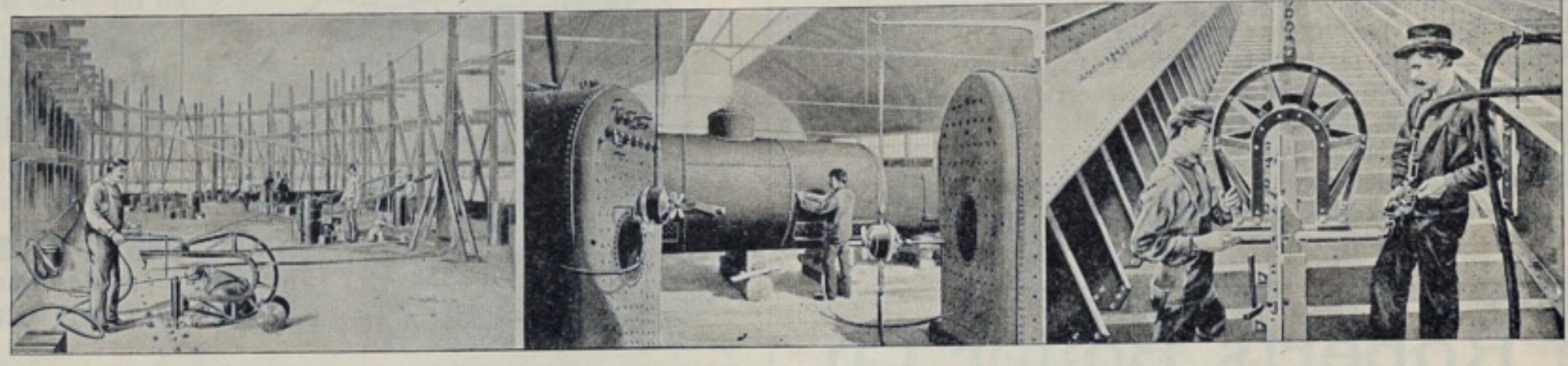

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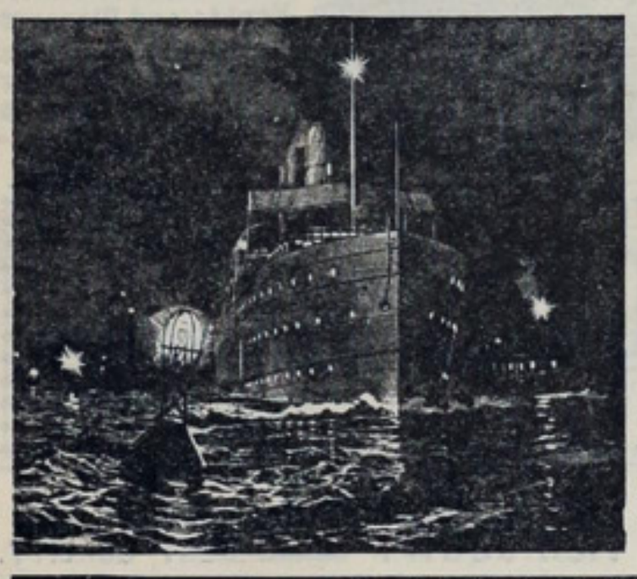

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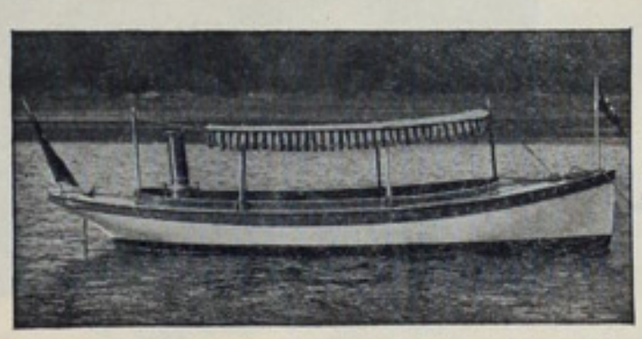

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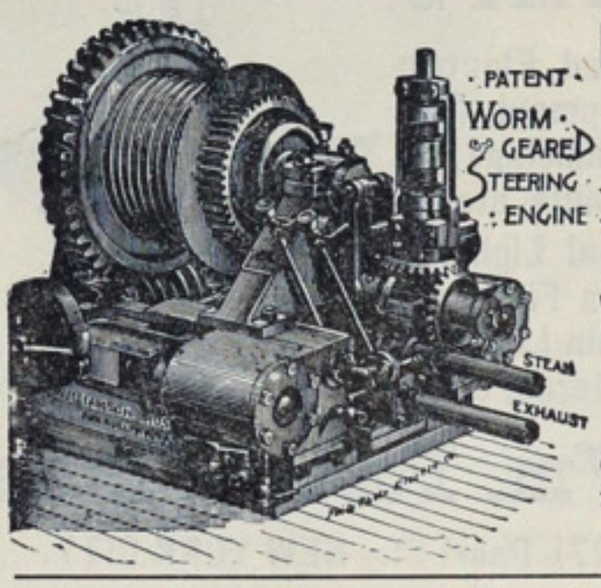

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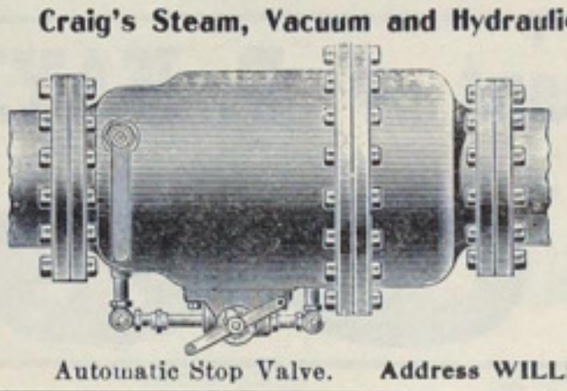

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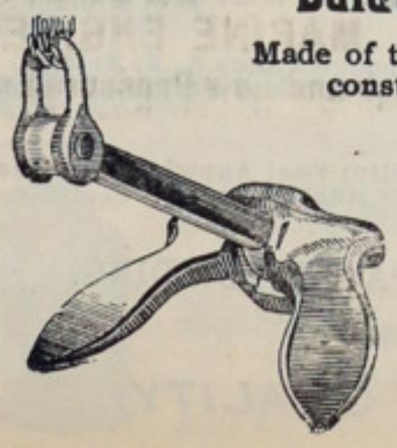

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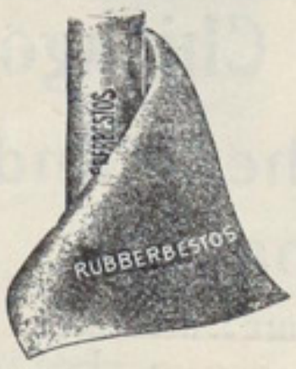

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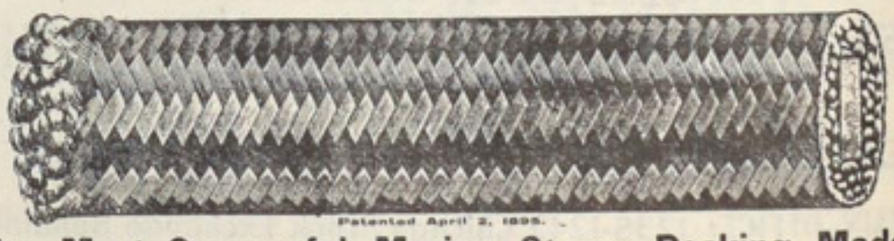

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